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ACTIVE IMMUNIZATION AGAINST DIPHTHERIA—THE NEED FOR IMPROVEMENT OVER PRESENT METHODS OF ATTAINING IT*

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While there is a steady improvement in the technical details and production of active immunization, we find that most communities are still in the propaganda stage of diphtheria prevention and have about reached the limit of their possibilities by the methods which have hitherto been employed. Improvement in technic and material are made from time to time and these may not reach the public through such agencies as are now in charge of immunization. Instead of the routine administration of toxin material in identical doses to children lined up in a clinic, it would seem that the child should be given individual consideration. Public propaganda may still be necessary to stimulate willingness to have children "vaccinated" against diphtheria, but under ordinary conditions in this country public administration of toxin antitoxin or toxoid is not necessary, not so effective nor careful, nor desirable. I hope to bring out the reasons for my opinions in this paper.

Immunization to a disease requires a careful use of methods which have been scientifically worked out. The individual child may have acquired an immunity naturally. The Schick test requires the utmost care in the preservation of the solution, its administration and its interpretation. Because an individual in early life may not retain his immunity, and because certain children require more than the standard number of doses, it is necessary that Schick testing or that a repetition of injections be made when indicated.

All children given active immunization should be tested afterwards, because a certain percentage are not protected by a short series of injections. Authorities private or public are not warranted in declaring children safe from the disease unless a physician with experience has seen that a truly negative reaction to intradermal toxin solution is present. Ramon said that the prevalence of diphtheria bears direct relation to the number of individuals showing a positive Schick test.

Refinement of Methods. Both the immunizing material and methods are becoming more effective and refined. The increase in the antigenic property of the toxin solution is evident to all who are familiar with the earlier experience of active immunization.

In 1913 Von Behring found, as a result of animal experimentation, that antitoxin would neutralize diphtheria toxin sufficiently to be safely administered to persons and that immunity could be produced thereby. Enough time has now elapsed to know that permanent immunity is thus produced, which becomes augmented by contact with carriers of the disease, with the advancing age of the individual.

Toxin-antitoxin has been changed in its strength until now one c.c. contains underneutralized toxin sufficient for O. 1 L dose for the guinea pig.

Looking for a method of giving more effective doses of toxin without causing a dangerous or severe toxic reaction, Ramon in 1923 brought out his method of modifying the toxin by the addition of 3 or 4 per cent solution of formaldehyd, the mixture then being incubated for 4 to 6 weeks at about the body temperature. The immunizing factor is saved by these methods. It is non-toxic and at the same time more antigenic. It goes by the name of Ramon's anatoxin and by the distributing name of toxoid. It has recently been stated by Binney[1] that the formation of toxoid when mixed with formaldehyd solution is not due to a direct action of free formaldehyd upon the toxin, but that a

*Read at meeting of Oklahoma State Medical Society, Tulsa, May 25, 1932.

1. Binney, Wm. E.: Action of Formaldehyd on Diphtheria Toxin., J. Immunol. 20:47 (Jan.) 1931.

compound is formed with amino-acid. Toxin containing not less than 400 minimal lethal doses per cubic centimeter is used in preparing toxoid. It is detoxicated by moderate heat for several weeks as above mentioned. It is tested both for its ability to neutralize toxin in the skin and also against five fatal doses of toxin for the guinea pig.

Krause's preparation, described in Vienna in 1927, is said to have the ability to immunize in 40 days, and is administered within a period of 8 days, three doses, 3 days apart.

Unless Schick testing is done and performed carefully it would be better to increase routinely the dosage of toxin-antitoxin or of toxoid to five of the toxin-antitoxin or four of toxoid for public administration. But it seems to me that the physician, or even the public agencies which should confine their activities to the indigent, should do skin testing and thereby know when an individual is protected.

In the cases of children under five years of age, it is well for the physician to retest such patients once a year or at least each time that diphtheria has appeared in the community.

I am in favor of each County Medical Society holding a Schick test clinic each year, for the destitute children of the county and immunizing those that need protection. If we wish to have the work done in the best way it will be in private practice.

DIPHTHERIA IN KANSAS CITY FOR TWO SERIES OF YEARS

Year	No. Cases	Deaths	Year	No. Cases	Deaths
1920	568	44	1928	151	18
1921	1221	81	1929	175	18
1922	592	61	1930	218	16
1923	516	40	1931	281	16

In spite of the fact that free immunization is urged upon the families of Kansas City whether there is a family physician or not, you will see that we still have usually above 200 reported cases a year and an almost uniform number of deaths, about 16 to 18. There are of course cases that are not reported and not diagnosed.

In the Canadian cities along the border, the occurrence of diphtheria was recently found to be 40 in 5,000 non-immunized children or one to each 125 children. In 3750 children given toxoid, only four cases of diphtheria appeared.

In the last few years we have been seeing some cases of diphtheria at the Isolation Hospital in Kansas City who had been given toxin-antitoxin in the school or clinic, and who were not thereafter Schick-tested. Probably not all got three doses, and from what we shall see today, further doses of toxin-antitoxin or toxoid will immunize about every susceptible child, two doses and sometimes three doses are not therefore sufficient in all cases.

225 CHILDREN GIVEN TOXOID IN PRIVATE PRACTICE

Ages of Children When Toxoid was Given

12 months or under	53
13 to 24 months	58
25 to 36 months	26
37 to 48 months	19
4 years	12
5 years	23
6 years	14
7 years	6
8 years	6
9 to 13 years	8

Only 48 of these children had been Schick-tested before given the toxoid: there were 177 children given the toxoid without knowing how many were susceptible. This is the way it is usually done.

169 children were given Schick test after toxoid.

Of these 151 were negative to Schick after 2 doses of toxoid or 89 per cent. 18 were negative to Schick after 4 doses. 169 or 100 per cent were negative after 2 to 4 doses.

Length of time after toxoid was given until Schick test was done—169 Cases:

6 weeks	27
2 months	38
3 months	44
4 months	26
5 months	12
6 months	6
7 months	2
8 months	2
9 months	3
10 months	2
1 year	6
6 years	1

It has been my custom to arrange a Schick testing day on Saturday as often as we have enough cases who may be ready to test. You will notice that they begin coming in at 6 weeks and the largest number comes in at 2 and 3 months. For various reasons some infants are never brought back, although the family has been informed that a Schick test after the toxoid will not have any extra cost attached to it.

When a preliminary Schick test is hyperactive as shown by a persistent large, deeply pigmented, desquamating area at the end of 5 to 7 days, it is well to give two extra doses of toxin-antitoxin or an extra dose or two of toxoid in the series of injections. Such children especially need to have their development of re-

sistance checked during the following months at 6 weeks, 3 months and 6 months.

The Dicks believe that the Ramon diphtheria toxoid in 3 doses immunizes better than the toxin-antitoxin with its O. 1 L+ dose, even in 5 doses. In France toxoid is used at all ages,

Schwartz, of Milwaukee, uses a third dose of toxoid at the end of 6 months to those children who are still positive reactors.

The French as well as the Canadians now give 3 doses of toxoid. This makes more probable the completeness of the immunization.

In the first five years of life, immunity may not be constant. Even if active immunity had been induced, with a resultant skin test, one must not take it for granted in early childhood that a tonsillitis or laryngitis is not diphtheritic, for susceptibility may have returned. I have had that happen in a doctor's family. One will get help from a Schick test in such an instance. A culture from the throat may be of assistance. If there be a laryngeal stridor a dose of serum is advisable.

Sensitization by the small amount of horse serum in toxin-antitoxin is possible but not common. Recently, a child to whom I had given toxin-antitoxin at 2 years of age, later had the problem arise of needing antitoxin against tetanus, a serum which is very apt to cause a reaction. In such cases it is well to first give an intradermal test of 1 to 10 dilution of the serum and watch for a local reaction. In the child just mentioned no reaction occurred, and he handled his tetanus serum without accident.

Toxoid is still generally used in two doses, with three week's interval. Ramon gives a third dose two weeks after the second. Ramon and Helie[2] found 96 to 100 per cent immunes in 6 to 8 weeks after the series of injections. Ramon states that two doses of toxoid give immunity as frequently and as lasting as three doses of toxin-antitoxin. Park stated that only 80 per cent become immune after three doses of toxin-antitoxin. Bloomberg[3], in Canada, reported 100 per cent immunity after the 4th dose of toxid, in 572 cases. Guilford[4] stated that despite the high percentage of immunity reported by the use of toxoid, the duration of the immunity has not been established. Mozer[5] found 95.5 per cent negative Schick tests in persons given toxin 2, 3 and 4 years before. Schick tests must be performed and read at the proper time following the administration of the toxoid in order that one may know the results. The duration of immunity depends among other factors upon the number of doses given. It should therefore be based upon 3 or 4 doses of toxoid rather than a routine two injections. Cooperstock and Weinfeld[6] reported 58 per cent of negative Schick tests in 3 weeks after toxoid, 79.5 in 9 weeks, and 92.5 in 16 to 22 weeks. Even one dose will give a certain number of negative Schick tests, about 46 per cent (Schwartz[7]).

The age factor, the number and spacing of the doses play a part in determining what the figures will be for the time at which individuals get a negative Schick test. Environment is a factor also (by contact). Injections close together may interfere with the production of immunity because of the "negative phase" which takes place after the first dose.

2. Ramon, G. and Helie, G. L.: Am. J. Dis. Child., 39: 685, April 1930.

3. Bloomberg, Max. W. and Fleming, A. Grant: Canad. M.A.J., 17: 801, 1927.

4. Guilford, H. M.: Wisc. M. J., 29: 12, Jan., 1930.

5. Ramon, G., Debre, R., Mozer, G., Mlle. G. Pichot: Annales De L'Institut Pasteur 45: 326, 1930.

6. Cooperstock, M. and Weinfeld, G. F.: Am. J. Dis. Child., 40: 1034, 1930.

7. Schwartz, A. B.: Am. J. Dis. Child, 41: 1509, 1931.

Reactions to Toxoid. In young children, local reaction at site of injection, or general reactions are rare. I have seldom seen any local, and do not recall a general reaction. Pre-school children never have any appreciable reactions. In older children and adults a general reaction is more common from toxoid. This is true of other prophylactic measures in older individuals. Dick advises a preliminary Schick test in an adult to determine whether there is a marked pseudo-reaction. If also there is a history of diphtheria, it is well to give 0.1 to 0.25 c. c. of toxoid as preliminary doses. Dick states that the broth used in making toxoid should not contain an excessive amount of protein.

TOXIN-ANTITOXIN	COMPARED WITH	TOXOID
Requires 3 doses or more.		
Administration takes 2 weeks or more.		
Causes less reaction in older children than does toxoid.		
To be Schick-tested 3 to 6 months afterwards.		

Immunity takes longer to develop.

May sensitize due to presence of its horse serum.

Results better known from longer experience with this method.

TOXOID

Two doses or more.

Three weeks or more.

More reaction the older the child. None usually under 5 years.

Six weeks afterwards.

Immunity more rapid.

No sensitization.

Newer method, but the results are becoming well known.

Schick test reading can be greatly simplified for active immunization by waiting one week. The test area becomes brownish, pigmented and sometimes scaly, and one can therefore eliminate the question of pseudo-reactions. Routinely then, the mother is asked to bring back the child one week after the test is performed. If there is any reason for reading the test earlier, such as an exposure of the child to diphtheria, the test should be watched each day after being made.

Summarizing. Immunization will be more carefully done, checked by Schick tests, and retested when advisable, if physicians in private practice will make this a part of their careful regular work.

At present, toxoid in 3 or 4 doses seems to give the best results. This number of doses should be used if Schick testing is not to follow the injection of immunizing material.

Toxoid should be given preferably between nine and twelve months of age, or thereafter as soon as the opportunity occurs.

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POLYCYTHEMIA VERA

Clair L. Stealy, San Diego, Calif. (Journal A. M. A., May 14, 1932), believes that his experience with the use of phenylhydrazine hydrochloride in the treatment of a case of polycythemia vera over a period of seven and one-half years shows that: 1. Once the necessary dosage has been established for the individual patient, the patient will respond to that dosage consistently. 2. The patient does not acquire a tolerance to the drug necessitating increasing dosage. 3. The leukocyte count cannot be used as an index to treatment. 4. The drug does not produce any apparent deleterious effect on the liver or kidneys.

DIPHTHERIA*

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This discussion is intended to bring before us certain practical points encountered in the diagnosis and treatment of diphtheria. For the five year period ending December 31, 1931, diphtheria was given as the cause of death in Oklahoma one thousand five hundred and sixty-seven times, (1567), an average of 321 each year. While we may rightfully expect a marked reduction in both the incidence and the mortality due to this disease during the next five years as a result of the increased effort toward universal immunization of susceptible individuals, it deserves some consideration now.

Kinnamann[1] of Kansas makes this significant statement, "we have observed in Kansas that diphtheria is apparently of a more virulent type as the number of immunized children is increased. Immunized carriers pass diphtheria organisms of a virulent type to the non-immunized child with the result that the case-fatality-rate is increasing each year among the non-immunized children who contract diphtheria". Whether Kinnamann's explanation of this increased case-fatality-rate is entirely correct or not, such observations should serve to make us more determined to immunize all susceptible persons and put us on guard lest we err in the recognition of diphtheria.

The recognition of diphtheria is not always easy, but certain characteristics of its onset, clinical appearance and course, aid us materially. There is usually acute discomfort localized in the throat, dysphagia, often a temperature of 103 or 104 and after a few hours the appearance of a gelatinous film over the involved area. The temperature may drop abruptly after 12 or 18 hours and the throat symptoms become much relieved as the definite diphtheritic membrane appears. Because it is unusual for the physician to see a patient in the first 12 hours of any illness, the initial elevation of temperature and early appearance of the throat are rarely observed. The typical diphtheritic membrane is usually a dirty grayish patch, tenacious, removed with difficulty, but on removal leaves a bleeding surface. In

*Read before the Section on Medicine, Oklahoma State Medical Association, Tulsa, May 26, 1932.

adults and late cases at any age, the membrane varies greatly from the typical.

Follicular tonsillitis, scarlet fever, septic sore throat. Vincent's angina and syphilis, (secondary lesions), are the conditions which must frequently be differentiated from diphtheria.

Follicular Tonsillitis gives a more prolonged high temperature with more constitutional symptoms and presents numerous small yellowish white spots on the follicles of the tonsils.

Scarlet Fever is more often accompanied by vomiting, has a more reddened pharyngeal ring and soft palate, and a yellowish exudate easily wiped from the tonsils. Then, too, within 24 to 48 hours the skin eruption appears.

Septic Sore Throat has much more swelling and edema of tonsils, pillars, and uvula with marked necrosis and extremely foul odor. The neck likewise is more swollen.

Vincent's Angina may be absolutely indistinguishable from diphtheria when the infection is limited to a tonsil, except by examination of direct smear. Vincent's angina is more often unilateral, however, and has a greater tendency to ulceration.

Syphilis. Secondary syphilitic infections in the pharynx run a longer course, usually are associated with other secondary syphilitic changes or a history of infection, cervical adenitis, are unaffected by diphtheria antitoxin and clear up promptly with specific treatment. The blood Wassermann, of course, is usually positive.

Combinations of these conditions may occur. In 450 consecutive cases of scarlet fever, I observed seven instances of clinical diphtheria and clinical scarlet fever coexisting, all substantiated by positive throat culture for diphtheria bacillus and the usual course and desquamation of scarlet fever. It seems then when there is any doubt about the local throat condition the patient should have the benefit of diphtheria antitoxin. It may be impossible to tell whether or not diphtheria is present also in what is usually designated as septic sore throat and I feel that diphtheria antitoxin should be used routinely in these cases.

Nasal Diphtheria usually accompanies the faucial type, but when occurring alone is milder in its onset and more prolonged in its course and is characterized by a persistent sero-sanguinous nasal discharge. Any persistent sero-sanguinous discharge from the nose should be examined for diphtheria bacillus, except possibly that known to be due to a foreign body in the nose.

Laryngeal Diphtheria usually has a history or appearance of preceding faucial involvement. It is to be distinguished from acute laryngitis and acute spasmodic croup, by the gradual developement of hoarseness, aphonia and dyspnea, continuing into the daytime and becoming gradually worse. Mechanical relief of the dyspnea is a matter which may have to be considered. A discussion of that phase is impractical here, but in a general way it may be stated that unless someone will always be available to replace the intubation tube in case it becomes plugged or is coughed up, a tracheotomy is the better procedure.

CULTURES

While I cannot too strongly discourage the practice of withholding the diagnosis and the administration of antitoxin pending a report from throat cultures, one point on the manner of taking them, will aid in securing a higher percentage of positive cultures in diphtheria. The diphtheria bacilli are to a large degree mechanically removed from the exposed surface of the membrane by saliva, food and fluids and are present in greatest numbers under the advancing margin of the membrane. If one then rolls the applicator *under the margin of the membrane* in taking the specimen, more positive cultures will be obtained the first attempt.

ANTITOXIN

There is wide variation in the dose of antitoxin recommended in the treatment of diphtheria. It will ordinarily be considered sufficient to give 5000 to 10,000 units of antitoxin in early cases and those of moderate extent. In severe and toxic cases, especially if of several days duration, a dose of 10,000 to 20,000 units should be given with the larger dose receiving preference. Whatever dose has been decided upon it should be given at one time, though part of it may be administered by different routes, i. e. intramuscularly, intravenously or intraperitoneally, but not subcutaneously, because of slow absorption. A skin test for sensitization to the serum is advisable as a routine before injecting antitoxin and it is imperative that it be done before giving anti-

toxin into the vein. Quite often it will be observed that the visible membrane is even greater in extent 18 to 24 hours after giving antitoxin than at the time of injection and it is this which causes physicians to give a second injection of antitoxin. It appears that this increase in the size of the membrane will usually occur regardless of the amount of antitoxin originally given. Diphtheria membrane requires time to develop and the pathologic process had already been initiated over a definite area before antitoxin was given and simply goes on to completion.

Because of the severe reaction which may result, I cannot agree with those who advocate large doses of antitoxin intravenously. It is true that properly diluted and given slowly at body temperature, reactions are less likely to occur. 5,000 or 10,000 units of diphtheria antitoxin given into the vein will often cause a chill and fever of 104 or higher, the total reaction lasting over a few hours. It would seem desirable to avoid such a reaction in a patient who is potentially a cardiac case, if such can be accomplished without other risk. 1,000 or 2,000 units given into the vein rarely cause any reaction and this amount is theoretically enough for immediate use until absorption occurs from the larger quantity given intramuscularly.

COMPLICATIONS

The common serious complications of diphtheria are:

(1) Paralysis
(2) Heart changes
(3) Hehorrhage

Paralysis of the soft palate, with regurgitation of fluid through the nose and nasal speech, ptosis of eye lid, weakness of facial muscles, loss of knee reflexes and inability to walk are all due to peripheral nerve injury. The paralysis eventually recovers if the patient does not succumb to other complications. One or more of the above paralyses usually precede the appearance of heart damage. The heart changes complicating diphtheria may show themselves in various ways; as acute cardiac failure, dyspnea, myocarditis, rapid or slow rate, absolute irregularity of rate, rhythm and force and murmurs.

There occasionally occurs a tendency to hemorrhage with bleeding from the nose and mouth and into the skin and internal organs. The prognosis is thereby always rendered much more grave.

TREATMENT OF COMPLICATIONS

Bed rest is imperative and no time or temperature limit can be placed on it. Patients with paralysis and heart complications tolerate large doses of strychnine and seem to be especially benefited by it. A child of three or four years of age can take 1/40 to 1/30 grain of strychnine every 4 hours by mouth or by hypodermic injection if vomiting: the dose should be reduced if restlessness occurs. It is generally agreed that digitalis is contraindicated in the treatment of post diphtheritic cardiac changes. McCullough[2] showed with the electrocardiograph evidence of damage to both the intrinsic conducting mechanism and to the heart muscle as a result of diphtheria. Marvin[3] in studying the effect of diphtheria on the cardiovascular system found, "The electrocardiograms from patients dying of circulatory failure, have shown two significant changes: interference with auriculoventricular conduction and interference with intraventricular conduction." Cushny's Pharmacology and Therapeutic 9th Edition states concerning the action of digitalis on the frog's heart, "consists of changes in the generation and conduction of impulses and in the contractility***. The power of conducting impulses is distinctly reduced and this makes itself evident in the frequent failure of an impulse to pass from the auricle to the ventricle". These observations convince us that in diphtheritic myocarditis there is an interference with conduction of impulses within the heart and the administration of digitalis will cause still further embarrassment of cardiac function.

CARRIERS

A small percentage of persons recovering from diphtheria will become "carriers" of the bacillus. When local treatment to the nose and throat fails after a reasonable time to eradicate the organism, removal of the tonsils and adenoid tissue is usually successful in clearing up the condition.

IMMUNITY

The degree of immunity which a patient develops as a result of a diphtheritic infection is widely variable. Most individuals become permanently immune, some are immune for only one year or two years. If the immunity remains for two years, it will probably be permanent. It is essential then in view of the possibility of a loss of immunity after a period of

time, that we advise every patient of this possibility and urge upon him the necessity for having a Schick test done after one year and after two years. If he should show a positive Schick, he should be immunized .

1. Kinnamann, C. H. Effect of Diphtheria Immunization upon Case Incidence and Mortality. Am. Jour. Public Health 21:1013, Sept. 1931.

2. McCulloch, Hugh. Studies on the Effect of Diphtheria on the Heart. Am. Jour. Dis. Children, 1920. Vol. 20, P. 89.

3. Marvin, H. M. The Effect of Diphtheria on the Cardiovascular System. Am. Jour. Dis. Children. 1925, 29:433.

SIMPLIFYING SUMMER INFANT FEEDING PROBLEMS

Vacation travel presents fewer difficulties in caring for infants on S.M.A. Instead of using milk from dairies of unknown standards, the mother in feeding S.M.A., is using a food made from milk which her physician knows to be produced under strict sanitary requirements and rigorous inspection.

Refrigeration is unnecessary because individual feedings of powdered S.M.A., may be made up as needed. If the supply runs out, S.M.A., is available virtually everywhere in the United States in prescription pharmacies from Skowhegan to Hollywood. S.M.A., is not a grocery product for adults, but a scientific antirachitic breast milk adaptation designed for infants.

S.M.A., is made to resemble nature's own formula, breast milk, as closely as modern scientific knowledge and laboratory control can accomplish,—certainly closer than a trial and error formula.

TO WHOM SHOULD THE PROFESSION BE LOYAL?

The answer to the above is—to the company that gives the profession, first, a product that is dependable; second, the company that is loyal to the physician; third, the company that advertises to the profession and not to the laity, that is, the containers should not be labeled with all the instructions that are not removable. This is particularly so on containers of infant foods. No food agrees with all infants, so there are no instructions that can be placed on inafnt foods that will agree with all babies. When this is not considered by the company and the container has printed all over it, instructions for the amount of the product to be given to the age of the child, as is to be expected some infants suffer by this lay prescribing and the directions on the can.

One company that makes a specialty of infant food have always been very considerate of the profession, and have always labeled their products for the physician and not the lay. Mead Johnson containers have only the analysis of the product and the calories to the tablespoon or the ounce, therefore the general practitioner and especially the pediatrician should specify Mead, Johnson Company products.

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THE PRESENT STATUS OF ALIMENTARY INTOXICATION OF INFANTS*

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The general morbidity from alimentary intoxication has been greatly reduced by the introduction of more sanitary measures, improved standards of infant feeding and a better understanding of preventive measures. The mortality, however, in any given series of cases remains high. The slowest of development and the most difficult of mastering are those problems which concern the child acutely ill with what we please to call alimentary intoxication as opposed to bacillary dysentery—the latter being distinguished from the former pathologically by the presence of ulcers in the lower intestinal tract and clincially by the appearance of blood and pus in the stools.

The clinical picture of so-called alimentary intoxication is usually fairly definite. The child is acutely ill usually with fever, vomiting, diarrhoea, prostration and, if prolonged, dehydration, apparent from scaphoid abdomen, sunken eyes and fontanelle, dry skin and mucous membranes.

The pathological changes in the digestive tract are few. There may be pin point erosions of the gastric and intestinal mucosa but there is usually little more. The kidneys often show degenerative changes. But so few are the pathological findings as compared with the severity of the gastro-intestinal symptoms that we have been wont to say that the patient died a chemical death. Bacteriological studies have been just as indefinite. Various organisms have been blamed, particularly in given epidemics. No work, however, has found general confirmation. It is very probable that etiological factors vary in different localities and in different years in the same locality.

The very nature of the disorder has lent confusion to a clear understanding because diarrhoea and vomiting are two of the most common signs of illness in childhood. It is not strange that most of the attention has been focused on the intestinal tract, nor is it strange that progress has been slow since the digestive tract

*From the Oklahoma City Clinic and Wesley Hospital. Read before the Oklahoma Pediatric Society, Tulsa, May 24.

shows so little evidence of pathological change.

With the introduction of bacteriology into medicine the flora of the intestinal tract was studied carefully, but no definite relationship could be shown between the gastro-intestinal disorders of infancy and bacteria. Then came more elaborate investigation of foods and studies in the physiology of digestion and in metabolism. Czerny and Keller thought that the digestive disturbances of infancy were metabolic in origin and that fats were the chief food constituents causing them.

Flexner in 1900, and Duvall and Basett in 1902 succeeded in establishing the dysentery bacillus as the etiological cause of ileocolitis. This ultimately leads to a clear cut distinction between alimentary intoxication and acute bacillary dysentery, but for the next few years there was much indecision as to which diarrhoeas were infectuous and which were not.

In 1907 and 1908 Finkelstein elaborating on the work of Czerny and Keller published his observations on the intestinal disturbances of infants which were destined to have a far reaching effect. He felt that these digestive disturbances were due to perverted metabolism and to the toxic effects of the food elements, fat and carbohydrate. He divided the gastro-intestinal disturbances of infants into four groups: (Snow[1]).

1. *Disturbance of balance* — the tolerance for food especially fat is somewhat lessened. The child, however, does well on a limited diet.
2. *Dyspepsia* — the tolerance is greatly lessened. These children do well on nothing more than a basal diet.
3. *Decomposition*—the stage of decomposition and atrophy in which an increase of food causes a sudden decrease of weight.
4. *Intoxication*—the stage of extreme intolerance to food.

Finkenstein was very definite in his statements and said that from now on sugar must be considered the cause of often fatal toxemia. Later he and Meyer developed Eiweiss or protein milk for use in cases of intolerance to sugar.

There followed much discussion of Finkelstein's classification and many alterations of the type of diet he advised, but followers of the German school, if they expected to see very much improvement, were to be disappointed as shown by a report of cases from the Hospital for Sick Children submitted by Cox[2] in 1922. He reported 190 cases of fermentative diarrhoea with a mortality of 37.5%, 181 cases of decomposition with a mortality of 57.5%, and 46 cases of acute intestinal toxemia with a mortality of 58.5%.

It is quite obvious that up to 1922 our methods of treating alimentary intoxication were not adequate. During the past decade a great deal of material has been collected on the effect of diarrhoea, vomiting, and dehydration on the chemistry of the blood. In addition there has been an effort to separate those cases of intolerence to food caused by a specific sensitization more especially to milk.

In 1926 Powers[3] published his paper on the management of intestinal intoxication. Previous to this pediatricians had recognized the importance of general care, but this paper was perhaps the greatest impetus such treatment had received. Powers stated that he considered the essential points in the treatment of intestinal toxemia to be: 1—the administration of fluids, 2—the transfusion of blood, 3—the withdrawal of food for a period of time, and 4—the giving of food at the end of the period of starvation in gradually increasing amounts. He further stated that he did not think it made very much difference what type of milk the child was on so long as the fat content was not too high.

The feeding of fat free milk and of acid milk has been utilized for a long time, but additional emphasis was given by Marriott. He also placed great stress on the importance of parenteral infection as the cause for their continuation. He advised opening the mastoid antra in certain cases of intoxication[4]. While his advocation of antrotomy seemed somewhat radical it served its purpose not only in instituting a therapeutic measure which is at times valuable, but even more so in leading to the proper evaluation of the importance of parenteral infection.

With carefully calculated diets after a period of starvation, with the administration of fluids and blood transfusion as outlined by Powers, and with careful examination of the patient for infection and in-

stitution of treatment when found, the mortality still remained high. More definite studies of the blood chemistry by Hartman and others lead to a clearer understanding of the effect of diarrhoea on the blood and tissue chemistry.

Hartman[1] has found that severe watery diarrhoeas tends to produce changes in the direction of acidosis because of (1) extensive loss of body fluids, (2) loss of body salts in diarrhoeal stools and (3) starvation. The loss of water from the blood leads to reduction in the blood volume, which in turn leads to reduction in the volume of blood flowing through vital organs in a given time. Such circulatory insufficiency leads to anoxemia which favors the accumulation of lactic acid and also leads to a diminution of urinary excretion, which favors retention of such ions as Cl, HPO4, and SO4. Increase in these ions occur largely at the expense of the bicarbonate ion which is displaced from combination with base. As a result the ratio of B H CO3—H2 CO3 which is normally 20—I, tends to diminish because of decrease in the numerator and increase in the denominator.

Associated with the failure of water reabsorption by the large intestine there is also a failure of reabsorption of basic salts from the intestinal juices which further leads to a reduction in the alkali reserve.

Starvation results in destruction of body tissue with liberation of such acids as sulphuric and phosphoric, and, if carbohydrate metabolism is reduced long enough, the accumulation of acetone bodies which further depletes the alkali reserve.

To combat this tendency toward acidosis Hartman advised a solution to be given instead of saline parenterally and another instead of water to be given by mouth. The former is a solution of lactic acid and sodium hydroxide which forms sodium lactate to which has been added Na Cl, K Cl, and Ca Cl2. The lactate ion is burned leaving the sodium ion to replace sodium which is lost. A similar solution of sodium lactate to which may be added Karo is given by mouth. The application of these solutions has proved an important aid in maintaining the acid base balance in infants with severe intoxication.

In 1930 Marriott[2] published his book on infant nutrition in which the present understanding of acute gastro-intestinal intoxication of infants is clearly and excellently presented. His appreciation of the role of bacteria and of digestion as derived from his own and the work of others is well worth consideration. When the temperature of an infant is elevated the gastric secretions are diminished especially the hydrochloric acid. This deprives the stomach and duodenal contents of their anti bactericidal properties and permits the growth of bacteria which are normally in the flora of the lower intestinal tract. Experimentally the toxins from the colon bacillus when injected per rectum cause no symptoms, but when given by mouth a severe diarrhoea follows, If, therefore, they are permitted to grow in the stomach and duodenum Marriott holds that the toxins they produce will cause intestinal disturbances, and the vomitus from such a patient offers an excellent means for organisms to find their way into the middle ear. Children fed on cow's milk have less acid in the stomach because of the greater buffering power of the increased salt content over that of mother's milk. He, therefore, feels that acidified milk is best, preferably a milk which has been acidified with an organic acid to prevent further drain on the alkali reserve. He feels that acidified milk decreases the number of organisms which grow in the upper intestinal tract and thus eliminates this to some extent as a possible source of intestinal irritation. However reasonable the use of acidified milk may be one cannot expect too much of it, and the value of a period of starvation cannot be over estimated.

The treatment of alimentary intoxication in the light of a clearer understanding of the acid base balance, and a proper consideration of parenteral infection is on a much firmer basis. There remains, however, many cases which are beyond our control. I am not referring to the marantic child but to the child who suddenly gets sick, has fever, vomits, is prostrated, goes into acidosis and dies within a few days of onset or develops a severe uncontrollable diarrhoea gradually becoming dehydrated and wasting away. Many of these children appear to be well nourished but in reality their tissues resist disease processes poorly largely because they have been fed on formulae very high in sugar and low in protein.

A large percentage of these children are recovering with treatment directed toward

maintaining their acid base balance and with transfusions, but there seems to be some other factor present which we have as yet not taken into consideration. In 1923 Boyd[9] reported a toxic substance which she found in the mucous membrane of patients dying from acute intoxication. This substance is very toxic for young animals producing a definite symptom complex consisting of depression and narcosis, anorexia, circulatory failure, increase in the number of stools and in some instances convulsions and death. This toxic substance was present in great quantities in the portal veins and to some extent in the general circulation. Its highest concentration would, therefore, reach the liver.

More recently Minot and Cutler[10-11-12] have shown that the liver damage and fatalities in dogs in carbontetrachloride poisoning is probably due to quanidine which is normally present in the blood in small amounts. Dogs intoxicated with carbontetrachloride have a marked increase in the amount of quanidine in the blood. Quanidine injected into dogs produces a similar toxic condition. There is profound toxemia, high quanidinemia, low blood sugar, depression, a severe bloody diarrhoea and convulsions. At autopsy some of them have increased cells in the spinal fluid, positive globulin, and focal areas of conjestion in the brain. These animals do not show evidence of toxemia if there is sufficient ionized calcium in the blood stream, and the progress of toxemia can be arrested by the injection of calcium chloride into the vein. They further demonstrated the presence of an abnormally high amount of quanidine in the blood of eclamptic women and a few cases treated with calcium therapy showed improvement.

Minot, Dodd and Casparis[13] carried this work further in its possible application to acute alimentary intoxication, In many of the most seriously sick children they found a high quanidinemia and a low blood sugar. Their preliminary report consists of a study of 5 cases of intoxication treated with calcium gluconate intravenously and intramuscularly. While their series was small they felt that there was definite improvement and that this was to a considerable extent due to calcium therapy.

The origin of quanidine is an important question. The two main sources are probably decomposition of tissue and incomplete breaking down of ingested protein. It has been suggested that cow's milk contains in the summer time a larger quantity of amino acids from which quanidine may be derived. It is of course too early to say whether in these studies will be found an explanation of the toxemia in these cases, but they are interesting and are apparently directed toward the right line.

This brings us to the last consideration. Vitamine A is said to increase the resistance of infection. Block[14-15] in describing cases of xerophthalmia in Denmark during the war noted the marked increase in infections particularly of the respiratory tract and genito-urinary tract. Boynton and Bradford[16] compared the effect of infections on rats which had been fed on a diet deficient in vitamine A and D and noted a marked decrease in resistance in the rats fed on vitamine A deficient diets. A decrease in resistance to infection occurred before signs of xerophthalmia appeared. Kramer[17] in 1923 demonstrated that the intestinal epithelium taken just above the ileo cecal valve in rats fed on a diet deficient in vitamine A became atrophic and that bacteria grew luxuriently in the mucous glands. Wolfe and Salter[18] did not find this change but noted changes in the epithelium of the respiratory tract, the salivary glands, and genito urinary tract. Mason[19] feels that the primary injury to the epithelial cells is concerned in some way with an interference in the secretory process of the glandular type of cell, which ultimately leads to a cornefication of epithelia and the dried surface and dead cornified cells offer an excellent place for the multiplication and invasion of bacteria.

We are well aware of the fact that the severe cases of intestinal toxemia occur more frequently in infants who have been poorly fed. Not only are these children deprived of a certain source of vitamines in cod liver oil and orange juice but their diet is very deficient in them. The reaction from this extreme is seen in the fact that healthy, well-nourished, adequately fed children are stuffed with every conceivable form of vitamine in amounts calculated to cure the worst forms of deficiency in the most poorly nourished children. But the fact remains that vitamine A deficiency may be a factor in alimentary intoxication and more particularly in the severe diarrhoeas and marantic children—indeed as suggested by

Dodd[29] this may be the real benefit of transfusions. At any rate I feel that it is a mistake to overlook vitamine A as a factor and to replace codliver oil which has both A and D in it for viosterol which has only D.

In reconstructing the sequence of events which occurs in acute alimentary intoxication it is very likely that the condition is precipitated by infection, over heating, or some impropriety in the diet such as over feeding during extreme hot weather or feeding food which is not easily digested or is spoiled. The infection may be a cold, otitis media, mastoiditis, impetigo, pyelitis, pharyngitis, boils, etc. The child becomes acutely sick with fever, vomiting, diarrhoea, and prostration.

The first thing that should be done is to stop all food and if vomiting stop everything by mouth. This gives the intestinal tract a chance to rest from its work. Even though one feels very definitely that the food the child had been getting was very poor, and even though it may have been responsible for the upset, this is no time to change the formula for only harm can be expected from any food.

The child should then be thoroughly examined for evidence of infection. The mothers everywhere seem to expect the doctor to prescribe a purgative, and quite often they have already given one before the doctor is called. This practice should be avoided except in those rare incidences when we know the child had taken spoiled food because it would only aggravate the existing intestinal irritation.

If dehydration is imminent fluids must be given parenterally. Very sick children whether dehydrated or not should be given fluids into the vein, under the skin, or into the peritoneal cavity. It is good practice to see that the patient gets about 1/6 of his body weight in fluids each day and govern the amount and number of parenteral injections this way.

Should the fluids be saline, glucose, or Hartman's combined solution. If there is evidence of impending acidosis such as prostration, dehydration, or air hunger, Hartman's combined solution is probably best and with it glucose into the veins.

After the very sick child has been given plenty of fluids he should be transfused. This tranfusion consists of whole citrated blood from a suitable donor not in excess of 15 c.c. per pound of body weight. It is probably better to give a small one and repeat it than a large one.

The period of stravation varies in individual cases from 12 to 48 hours. Water in small amounts frequently should then be started. If, however, acidosis is feared, Hartman's solution to which Karo has been added may be given. If the patient retains water then orange juice may be given and as tolerance increases food may be added very slowly.

The type of food is not as important I believe as it was once thought. Cow's milk, evaporated milk, buttermilk, or dried milk may be used. I personally feel, however, that it is better to use a diluted whole milk than straight skimmed or protein milk, because if quanidine is a factor certainly increased protein should be guarded against.

In the very sick child from the start I think we are justified in giving calcium. Minot, Dodd and Casparis advise its use in the vein at first and then intramuscularly. They use a one percent solution of calcium gluconate and inject it very slowly into the vein.

Codliver oil should be added to the diet as soon as possible. This is particularly necessary in the marantic child, but we must remember that a certain number of these marantic children are specifically sensitive to cow's milk and will not thrive on it regardless of other treatment.

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SKIN ERUPTIONS FROM BISMUTH THERAPY IN SYPHILIS

In all of twenty-two cases of skin eruptions from bismuth therapy observed by Edward A. Skolnik and Irma Aleshire, Chicago (Journal A. M. A., May 21, 1932), the eruptions that developed as a manifestation of bismuth sensitivity have never previously appeared in the patients. The exanthems occurred during the administration of bismuth and ceased after the withdrawal of the drug, though some of the common skin disorders which they simulated are notably refractory to therapy. Since the eruptions in this series were so benign and resembled some of the usual skin diseases, the authors felt justified in reproducing the condition a second or even a third time to prove the etiologic role of the bismuth. Thirteen of the cases were tested and proved in this fashion. The mildness of the eruptions is best illustrated by those cases in which the use of bismuth was continued in spite of the sensitivity, some of these patients gradually becoming desensitized. In contrast to these cases, there are reports in the literature of cases comparable in severity to those of arsphenamine dermatitis. The acute types of rash produced were the urticarial, folliculopapular, exfoliative, and the erythematosquamous, which resembled pityriasis rosea. The chronic types were the lichen planus-like and the chronic lichenified form, simulating lichen simplex chronicus. By far the greater number, fourteen, were in the pityriasis rosea-like group. The incidence of skin reactions was approximately 1 in 1,140 bismuth treatments. Of the twenty-two cases reported, ten were in the Negro race, which is a much higher incidence than in the white race, considering the relative attendance of the two in the syphilis clinic. Reactions occurred with all the preparations used, which were an oil suspension of potassium bismuth tartrate, an aqueous solution of bismuth sodium tartrate, and an oil suspension of bismuth salicylate. The eruption was reproduced in several instances by a different preparation of bismuth, indicating that the sensitization was to bismuth alone. These reactions developed in patients undergoing treatment for all stages of syphilis. In no case was there sensitivity to neoarsphenamine, although one man showed a marked sensitivity to mercury. Other than the skin lesions there were no subjective manifestations attributable to the bismuth, except in two cases with moderate stomatitis and in another case with severe nausea and icterus. No serologic change attributable to the nonspecific action of the eruptions (esophylaxis) was found after their healing.

"SOME CAUSES OF MALNUTRITION"*

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The health status of the child depends on three factors, namely: heredity, environment and nutrition. The influence of these factors upon growth and development are interdependent and to secure optimum results a panoramic view of the child in its total aspects must be obtained. A single set of facts such as weight and height, posture, body build, mental attitude, general appearance, amount and kind of food eaten, advantages of home surroundings, schooling, and so forth, is not adequate in itself to appraise and pass judgment on the health of a child. However, it is important to know the facts concerning a child's parents as to their mental and physical status and educational opportunities; it is equally important to know the child's past and present history; the influence of home and school life, of neighbors, playmates, the hazards of disease, emotional problems and all the cosmic factors that pass by and upon the child day by day; and finally, it is most important to have a clear and profound conception of all the problems that affect the nutritional life of the child. Undoubtedly the main business of a child is to enjoy physical growth and mental development without surcease, to the end that his body equipment and his behavior enables him to happily and satisfactorily perform his biological and spiritual purposes during his whole life. Heredity, because of present eugenic practice, cannot be controlled to a great extent; environment, too frequently, cannot be materially altered; consequently the chief approach of the physician dealing with children is the proper application of knowledge bearing upon successful nutrition.

In order to do this the requirements of an adequate diet must be constantly borne in mind. The failure to fulfill these requirements must necessarily result in signs and symptoms, even though slight at times, of failing nutrition. The requirements of an adequate diet during the first year must include a minimum number of calories; 45 to 60 during the first year of life, sometimes more for very thin in-

*Read before the Staff of the Ponca City Hospital. February 12, 1932.

fants, but less for fat ones. The amount of food in calories per unit of body weight becomes decreasingly less as the child grows older until the average adult uses only about fifteen calories per pound of body weight. The child needs also a minimum amount of protein, and if milk is used as a basis, it requires one and one-half ounces of milk for every pound of body weight each twenty-four hours. When milk is not used (and children will grow normally without milk) other proteins, such as meat and eggs must be given in adequate amounts. Children fed on less than this minimum amount of protein will invariably develop anemia or nutritional oedema sooner or later. Then a certain amount of carbohydrate is necessary, though this varies with the muscular activity of the child, and the ratio to protein should often vary in putrefactive and fermentative disturbances. Children need approximately one teaspoonful of sugar or its equivalent in starch for every pound of body weight each twenty-four hours. The amount of fat in a child's diet is relatively unimportant, though it should often be reduced during fever, hot weather or any other condition where a delayed gastric emptying time may cause an increase in the disturbance. An adequate diet must also contain fat soluble vitamins A and D and water soluble B and C. It is difficult clinically, to determine a mild vitamin deficiency, except vitamin D. However, early and late in the child's life, it must have milk, butter, eggs, whole cereals including their outer covering, citrus fruits, vegetables, and adequate amounts of cod liver oil or sunshine. Further the child requires a minimum amount of water, which is one and one-half to two ounces per pound of body weight every twenty-four hours, varying with the weather and other conditions. The well-fed breast or bottle baby will not take much water, because it obtains the amount it needs in food, milk being 87% water. Finally an adequate diet must be digestible and palatable, and free from harmful bacteria. It must be remembered that certain disagreeable tastes and odors are the result of unpleasant associations, which explains why most infants will take certain things with impunity that adults dislike, for example, cod liver oil. Infants or children forced to take food or medicine usually dislike them. Attention is also called to the fact that artificial feeding of infants with cow's milk was not very successful until the milk was boiled. No wonder Eagle Brand milk, which is disparaged now, usually gave better results than unboiled cow's milk, because at least it was free from harmful bacteria.

Besides an adequate knowledge of diet, it is also important to recognize the attributes or characteristics of the healthy child. Conditions which cause the loss of the normal attributes may be accepted as the causes of mal-nutrition. Thus the normal child is happy, his emotions are stable and difficult to upset. He stands ordinary pain well, and is not fearful of anything except that which has given him previous harm or pain. He sleeps at regular intervals, and when awake requires practically no attention. He gets hungry at meal time, and enjoys a good appetite. His bowels move without interference; his skin is smooth and pink; subcutaneous fat is firm and turgent. His growth is regular and consistent. Children that vary from these characteristics to the same degree are abnormal.

The effects of disease, in the main, are nutritional disturbances. The crux of the importance of nutrition may be summarized in the axiom; so long as the child obtains his food requirements its ability to cope with disease is increased and in direct proportion the opposite is equally true. Exceptions to this, where nutrition may be disregarded for the time being, may be certain surgical diseases and acute fulminating infections, or toxemias. However, the successful outcome of a respiratory, gastro-intestinal, or urinary tract infection, and most other disturbances will depend in a very large measure on the maintainance of a normal or nearly normal nutrition. The ability to satisfy the requirements of nutrition usually varies with the severity of the effect of the disease. However, the disease itself should not blind one as to the possibilities of a failing nutrition. In other words, the child as a whole should be considered, and not just the disease. Infections are one of the principal causes of mal-nutrition, frequently in spite of the most intelligent management. It is common to see a child started through a period of under-nourishment, and consequently slow convalescence by the over-zealous application of empirical measures intended to combat the disease first hand, when perhaps the illness was trivial and in a child well able to have adjusted himself spontaneously. The method and requirements of immuni-

zation were not given due consideration. Then there is a large group of children suffering from mal-nutrition because for various reasons, adequate food was not offered, or would not be taken. To obviate this dilemma, one must know the requirements of an adequate diet; and further, one must recognize the factors that prevent children from eating when given the opportunity. Poor appetite is common, and is based on an unpleasant emotional sensation. Usually hunger, which is a physical sensation, prompts a child to perform overt acts intended to obtain food, though quite often the signs and symptoms of hunger are misinterpreted as nervousness, insomnia, and fretfulness.

The causes of poor appetite may be physical or psychological: The physical causes of poor appetite may be due to disease processes, such as infections, organic disease of heart, lungs, or kidneys, or to mental abnormalities, anemia, and so forth; or to hygienic deficiencies in the lack of sufficient fresh air, sunshine, exercise or sleep (the coddled child is the one to suffer more than the vagabond, as a general rule); also to dietary causes, such as over-feeding, especially where one food as milk predominates; too short intervals between meals, or eating between meals, which might be classed as overfeeding, but practically always results in insufficient intake of food. The proper physiology of digestion requires a regime of regular rhythm, consequently, a second feeding should never be taken until the first one has had ample time for digestion. This fact must be especially recognized when a diet rich in fats is offered, because it is well known that fats inhibit the emptying time of the stomach. Another very frequent cause of poor appetite is the omission of the vitamin factors in the diet. All of the vitamins that are known play some part in stimulating growth, hence the need of these factors in children is vastly more important than in adults. In this connection I believe that there is a common failure to recognize the physiology of the skin as a medium, which receives the radiating effects of the ultraviolet rays of the sun, and as a principal organ that has to do with the heat regulatory mechanism of the body. Overclothing, and too much in-doors results in characteristic deficiencies. The feeding of foods containing vitamins B and C as well as those containing organic iron should be started early in the infant's life, always before the need of such has become apparent. A diet which leaves a small residue, such as one consisting of too much sweet or starchy foods, is a frequent cause of poor appetite. Constipation is usually present in this type of diet, and the mistake is often made of treating the constipation with drugs rather than properly modifying the diet.

The psychological causes of poor appetite may depend upon the child or the attendants, or in the technique of the meals. Most children crave the attention of the mother, or other attendants, and often at meal time refuse to eat to obtain the desired attention. Quite often, also, children are too busy playing, or have too much interest in other things to enjoy their meals. All children are imitative in their nature and no measure in their management succeeds as well as the shining light of a good example. As a result we see many children who dislike certain foods, and refuse to eat well, because other members of the family set for them such an example. Then, there results invariably, from repeated coercive attempts to make the child live according to an unsound regime, a condition called negativism; and if such an unfortunate child feels that someone wants him to eat he simply is unable to perform satisfactorily, because of his attitude toward such management. The ideal condition, of course, would be to allow the child to eat if he wanted to, and not do anything about it if he did not. However, many mothers contrive various schemes to induce their children to eat, using one method for awhile, and then another. Thus, haphazard methods, wrong psychologic handling on the part of the attendant, usually induces the child to be concerned with the method used rather than to obtain the pleasure in the business of eating, necessary to enjoy his meal. There are many errors frequently seen in the technique of the meal, such as forced feeding, the over-solicitous hovering attitude, too much talk about eating habits, too much discipline especially stressing manners, unpleasant scenes, such as arguments or quarrels at the table, and too much time allowed at the table.

One of the most frequent causes of malnutrition in early life, especially, is vomiting, and I believe a more intelligent diagnosis of the cause of vomiting would result in fewer mal-nourished babies. In early life I would place too frequent nursing as the most frequent cause of vomit-

ing; next to this, nursing at the breast or bottle, too long, especially when the milk is sucked out with difficulty. Both conditions result in over-distention of the stomach, either through swallowed air or fermentation, and it is practically a routine of mine to allow infants to nurse for a period of ten minutes every four hours. An infant that does not obtain enough food is also very likely to vomit. Infants fed on formulas of low caloric value, even though large volumes of the food is given, are prone to vomit. Parenteral infections in older infants and children is the most frequent cause of vomiting. When vomiting is seen in a child, who has been doing fairly well, and fever is present, it is almost a certainty that a focus of infection exists somewhere in his body. It is a mistake to change the type of feeding with such a history. Sometimes infants are seen that vomit when every condition seems satisfactory. The infant sleeps poorly, cries a great deal, and nothing seems to please it. This may be a hypertonic infant, and the vomiting is a result of gastro-enterospasm. I find that some mild sedative, such as one-half grain of pheno-barbital, once or twice daily, relieves this condition nicely. I have never been able to obtain satisfactory results in the use of atropine. One must be on the look-out always for pyloric stenosis, appendicitis, and intestinal obstructions as well as intracranial conditions, and toxic states, such as acidosis, diabetis, nephritis, etc.

The recognition of the causes of diarrhea would save many infants and children from becoming mal-nourished, I always consider that a diarrhea of whatever nature is sufficient to empty the intestines and feel that the use of any cathartic only increases the already overactive peristalsis. The immediate effects of diarrhea is loss of water from the body, and if the loss is great enough disaster may result. By obtaining a good history of the nutritional life of the child and with a complete physical examination, it is not difficult as a rule, to determine the cause of the diarrhea. Once the cause of a diarrhea is determined, the proper treatment is obvious. I never consider that fermentation or putrifaction in itself causes diarrhea, but would always try to determine what caused those conditions. The classification of the causes of diarrhea is as follows: (1) starvation or under-feeding (2) mechanical irritation, that may result from spoiled milk (bacterial soup), excess of fatty acids, uncooked vegetables or fruits; sometimes, though not always, allergistic substances may act as mechanical irritants, honey for example. (3) infections outside the intestinal tract, such as "colds" tonsillitis, pyelitis, etc; also heat especially due to extremely hot weather in summer time. (4) infections inside the intestinal tract such as dysentery and typhoid.

Constipation, as such, probably should not be included in a discussion of mal-nutrition, but I see so many well children made more or less miserable and undernourished children made worse because of misunderstanding of the normal physiology of the gastro-intestinal tract. I feel that the only time a child really needs anything done to make his bowels move is in an impending or existing impaction as indicated by voluminous and dry stools. The use of laxatives and cathartics usually tend to aggravate the condition. The causes of so-called constipation are easy to recognize by checking the diet requirements. The dietary factors that should be considered are: (1) insufficient total quantity of food, (2) improper balance of carbohydrates, fats, and protein, (3) foods leaving too little residue, such as an excess of milk in older children, (4) vitamin deficiency, (5) use of laxatives and cathartics. Constitutional or anatomical factors may exist in such conditions as sluggish intestinal tract or atony, long sigmoid, variations in mesenteric attachments, anal fissures, celiac disease and Hirschsprung's disease. Hypothyroidism and the simple failure to form the proper habit should always be borne in mind.

Medical science has certainly made the first few years of a child's life less hazardous. However, the results are nothing like they should be, due to non-use or misuse of available knowledge. Mothers generally are sincere, intelligent, and all try hard, but they are not very successful in their venture of motherhood. Their offspring, too often, either die early or live in physical or mental abyss. One reason for this may be over-emphasis on the part of the physicians and parents. Parents, especially have become too self-conscious of their responsibility and some have been more or less transfixed with fear. Another reason may be that the science of pediatrics has changed or progressed so rapidly that there has not been time for the old ideas and ideals to have been re-

placed by the new. It is difficult for many to realize that pediatrics is interested mainly in the mental and physical behavior of children and is no longer a treatise on diseases of children. Some consider modern methods and ideas to be radical, but perhaps those people are rather intolerant of any opinions held by someone else. And then, there is another class of people who want what they want regardless of results. However, in the words of Secretary Wilbur, "In the midst of our crowding eagerness to help lift our children to higher levels, we must guard them against our own over-zealous programing and be sure to leave them sufficiently wide margins of free time and free space for the great and joyous adventure of growing up, as personalities operating under their own motive power."

TREATMENT OF OBSTINATE CHOREA WITH NIRVANOL

T. Duckett Jones and John Lesh Jacobs, Boston (Journal A. M. A., July 2, 1932), report the histories of three obstinate cases of chorea, with emphasis on their response to nirvanol therapy. In each of the three cases, "nirvanol sickness" was produced. The dosage was halved after three days and discontinued on the first appearance of rash. A definite rash occurred in each case; on the sixth day in case 3, and on the eighth and ninth days respectively in cases 1 and 2. Case 1 at no time showed a temperature reaction, and in case 2 there was a single rise to 101 F. (rectal), sixteen hours prior to the appearance of the rash. Definite eosinophilia occurred in all cases, with an inversion of the neutrophilic and lymphocytic ratio. There was a definite increase in the total eosinophils. Case 3 failed to show the usual variation in neutrophilic and lymphocytic elements until quite late, probably because of the complication of hemorrhage. The most interesting phase of the report is concerned with the unusual reaction of case 3 to nirvonal therapy. A definite rash appeared on the sixth day, preceded by a temperature rise to 102 F. (rectal). On the ninth day after therapy was begun, bleeding occurred, first from the gums, then into the skin and subcutaneously. Blood platelets disappeared from the smear. There was a conspicuous prolongation of bleeding time with coagulation time unchanged. A sudden pulmonary episode occurred on the ninth day, possibly best explained as bleeding into the lung tissue. Each of two transfusions was followed by definite improvement. The blood picture resembled bone marrow suppression, as produced with nirvanol in rabbit studies by Leichtentritt and Lengsfeld, and that seen in human beings, in benzene and arsphenamine poisoning. In addition, there was a secondary reaction, three weeks after therapy was begun, consisting in a rise in fever of two days' duration. The first reaction with its unusual pulmonary complication was nearly a fatal issue and shows clearly that the drug is one not to be used indiscriminately.

RINGWORM AND ITS ALLIED ERUPTIONS

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OKLAHOMA CITY

The title of this paper may suggest that an elaborate and technical essay upon ringworm is forthcoming, but I assure you it is my purpose to discuss only the interesting and important facts. I shall omit at the outset the various yeast infections such as actinomycosis, blastomycosis, favus, etc., and include only the common varieties which are seen daily in the practice of general medicine.

The word "eczema" formerly included all kinds of eruptions of unknown origin, including both the moist and dry varieties, most of which are now known by other names. Gruby, in 1842, discovered the causative factor in so-called eczema marginatum of the inguinal region, and later more carefully studied and designated by Sabouraud as epidermophyton inguinale. By this discovery much impetus was given to further study of dermatoses of which the etiology was unknown.

Such research has separated many dermatoses, such as psoriasis, pityriasis rosea, dermatitis herpetiformis and others from the group of eczemas, and this term has now become much more restricted. The work of Sabouraud in culturing various fungi from so-called eczema remains a classic in the annals of medicine.

Prior to the World war, fungus infections attracted but little attention; however, since then ringworm has become so common as to be classified as a serious public health problem. According to reliable statistics, such infection now afflicts about fifty per cent of the entire adult population. Fortunately, serious complication or widespread areas are rare.

It has long been noticed that in many patients who may have typical marginated, vesicular, fungous eruptions of the feet and hands microscopical examinations are positive for the feet only. No plausible explanation of this apparent phenomenon had been advanced until 1925, when both Jadassohn and Williams, working separately, proved that the eruption of the hands was, in most cases, only toxic in nature; in other words, the fungi on the feet liberated a toxin which had a predilection for the hands. Many others

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were soon able to confirm the findings of these two men.

Peck later proved that by administering the blood serum from a patient having a fungous infection to a patient negative as to actual infections, and also to the patch test of attenuated organisms, would soon become sensitive to the toxins of the fungi used in the original patch test.

These findings revealed the probable etiology of many of the previously unexplained, so-called toxic eruptions occurring over various parts of the body, and so frequently associated with ringworm infection of the feet. Such dermatoses were formerly classified as a toxic dermatitis, or eczema, with an accusing finger pointing toward an ever present focus of infection.

We are now convinced that this secondary toxic eruption known as trichophytid may include many forms of dermatitis. One of the most common forms is manifested as a vesicular and bullous dermatitis scattered about the extremities and trunk. These are sometimes so grouped as to be difficult to differentiate between atypical cases of dermatitis herpetiformis, pemphigus or erythema multiforme bullosa.

Another characteristic trichophytid may appear as multiple annular, discrete, pruritic, eczematoid lesions over the trunk; such may be mistaken for a pityriasis rosea, dermatitis exfoliativa or tinea corporis. The lesions, however, soon begin to involute and disappear, providing too vigorous and irritating treatment has not been instituted, and at the same time, active treatment has been directed toward the primary focus. Such a patient must be put on a general eliminative regime plus soothing, antipruritic lotions. The most important item, however, consists of active and persistent treatment of the primary focus.

No routine treatment for ringworm can be successful in all cases, because of location, sensitivity of the skin to strong medicines, the type of organisms, etc.

As in all other diseases, the most important part of treatment lies in its prevention. A great number of infections are traced directly to public bathing pools, locker rooms and gymnasiums. Some schools have very successfully combatted increase in fungous infections of the feet, by having their athletes walk through a shallow pool of dilute chlorinated lime on their way, for instance, to the swimming pool. Correction of constantly perspiring hands and feet is an important preventative factor. Daily use of good soap and water are valuable preventative agents.

Desquamation remains one of the chief methods of treatment of active ringworm. Chrysarobin evokes an irritation which seems to stimulate the skin into taking care of itself, either by the upbuilding of local immune bodies or actual destruction of the myceliae.

Many areas affected by ringworm soon become eczematized and are sensitive to many external irritants which previously did not affect the skin. Dirt, vegetation, soap and water commonly make ringworm lesions worse. Avoidance of secondary infection is an important factor. Bandaging the parts with a bland astringent ointment is of advantage.

When the lesions are between the toes, separating of adjacent infected parts is an important aid, by absorption of exudate and lessening irritation due to rubbing. If too strong keratolytic agents are used repeatedly, an eczematization may occur and be very difficult to heal. It is often impossible, however, to keep a patch of tinea from becoming eczematized; therefore, unfiltered x-rays in small repeated doses are valuable in the control of the disease.

The question of susceptibility to the various fungous infections is an interesting one, but like that of many other infections has not been solved.

SUMMARY

1. A short discussion of the common types of ringworm is presented.

2. Special consideration is given to the toxic manifestations of ordinary tinea; namely, vague, irregular, circumscribed, eczematoid lesions about the trunk and more commonly, vesicular lesions of the palms; these constitute the so-called trichophytids.

3. Suggestions as to treatment are given.

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A FURTHER STUDY OF THYROID PROBLEMS

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Much more than ordinary interest is attached to the subject of "The Study of Thyroid Problems." The purpose of this paper shall not be to discuss all the problems of goiter, but to mention some and give a detailed discussion of others. To the scientist or the surgeon, who devotes himself exclusively to the subject, this paper will be of little concern. To the busy physician, who has little time to review the literature, I hope that we may record some data that will be of value. The problems of goiter must be assumed by the physician, and not the surgeon, because the small number of cases operated concern only a minimum percent of the population affected with this silent but far reaching and ever present tragic disease.

Classification has been a problem for all concerned, since the real study of the disease began. This is due to the fact that classifications have been based on the opinion of the pathologist and physiologist and clinician, each classifying from his viewpoint. The classification which concerns the patient is—"am I sick, or will I be sick from my goiter?" The classification of importance to the physician who has to "paddle his own canoe" is—which types of goiters are producing symptoms and which are not. The question for him to contemplate is, "do I keep myself informed so that these symptoms can be recognized, wisely interpreted, and the patient given intelligent treatment?"

The American Association for the study of Goiter approved the following clinical classification:

Type 1. Non-toxic diffuse goiter.

Type 2. Toxic diffuse goiter.

Type 3. Non-toxic nodular goiter.

Type 4. Toxic nodular goiter.

Most authorities and teaching institutions taught a different classification. This classification makes it easy to standardize the records of the hospitals throughout the country and makes it possible for the student to carry in mind a working understanding of the subject.

The cause of goiter is the most interesting and fascinating problem in the study of the disease. Scientific investigators have in the past disagreed as to the cause of the various types of goiter. Pathologists have not agreed that all types are identical pathologically. More and more, however, conclusions seem to indicate that all types are the same both etiologically and pathologically.

Sufficient data has been collected and correlated to justify the opinion that lack of iodine and infection play a prodigious part in the production of pathological disturbances in the thyroid gland. Factors influencing etiology may be briefly mentioned as follows: Heredity, psychic trauma, food and water supply, and sex imbalance.

All modern authorities and scientific investigators agree that heredity plays an important part in the causation and transmission of goiter and cretinism, furthermore that goiter ancestry is almost universally found in cretins and deaf-mutes, and that the frequency of the two conditions is in proportion to the presence and duration of goiter in the community.

It will require further investigation to explain the occurrence of the disease in such large numbers in families where goiter already exists. We have studied groups of families in Colorado Springs in which the original member developed goiter while living in other states. The striking fact from the observation indicated that many girls and an occasional boy of the goiterous mother would develop goiter, and virtually all the girls and a goodly number of the boys of the third generation would become affected. It was further interesting to note that no other family in the same block or locality developed the disease, while goiterous grandmothers had many goiterous offspring altho buying groceries from the same store and drinking from the same water supply as their more fortunate neighbors.

Since the knowledge of goiter began, water supply has been considered a factor in the occurrence of the disease. Livingston tells that the inhabitants of Central Africa held this belief. Barton also states that the Indians of America thought that water was responsible for goiter. Many experiments by different investigators confirm the same opinion. If water is the cause; is it the absence or the presence of some substance contained therein that upsets the thyroid?

Bacterial infection is comprehensively explained by many scientific workers.

In the South, for many years, inhabitants took mercury frequently on account of malaria, and goiter affected the population to a minimal degree. Could the frequent disinfection of the intestinal tract have been the preventive agent, thus protecting the population in a measure from the spread of the disease?

The opinion that the colon group of bacteria is a causative factor is held by many investigators.

Is it thyroid need for iodine that is the cause of goiter, or is it the required normal iodine content of the blood necessary to render the infectious agent impotent, thereby acting as a buffer against the invading organism? Physiology of the glands clearly shows that the gland is normally flooded with iodine (more than any or all organs combined). Logically, inference could be made that when the threshold of iodine is lowered the organ is crippled, thus giving the invading organism a free hand for attack. (Many believe this true. No proof is in evidence that it is not).

A large group of investigators is committed to the theory that goiter is a deficiency disease. Marine and Kimball are its outspoken proponents. Small amounts of iodine are necessary to satisfy the physiologic demands of the thyroid and combat the agents that cause the development of goiter; be the cause lack of iodine or infection.

Is the normal content of iodine in the blood sufficient to prevent the original pathology and subsequent goiter? If so, in the event of inadequate iodine percentage, how are we to normalize the iodine content in all individuals and what methods are we to adopt to determine such a percentage in the blood stream?

The problems of thyroid pathology are more unsettled than any other phase of the subject. Some authorities assume that all pathological changes are one and the same, seen only at various stages of the diseased gland. Graham states, "except for such differences as may be due to variations in intensity and duration of disease, we find it inconsistent with our personal experience to accept diametrically opposed clinical entities. From the standpoint of pathologic anatomy of the thyroid there appears to be insufficient grounds for a fundamental distinction between the two so-called types of disease. We have no alternative but to regard diffuse and nodular goiter "as clinical variations of a single morbid state."

The inability to recognize the symptoms of goiter, by the profession at large, is a problem of great concern. Coordination of symptoms in a simple manner, in order that the clinician may constantly bear them in mind—that is, have them on his finger tips for differentiation—is of much importance. We have arranged them into the following groups:

A.

1. Extremely nervous.
2. Apprehensive.
3. Fearful.
4. Irritable.
5. Very restless.
6. Forgetful.
7. Depression.
8. Melancholia.
9. Insomnia.

B.

1. Tremors of closed lids or extended hands. (Most conspicuous sign).
2. Leg and knee weakness.
3. Feels worse in morning.
4. Subjective feeling of heat.
5. Sweating. (Moist hands.)
6. Tires on exertion.
7. Short breath on climbing stairs.
8. Swollen lids.
9. Urticaria.
10. Falling of hair.
11. General weakness.

C.

1. Active delirium.
2. Loss of weight.
3. Increased appetite.
4. Vomiting.
5. Diarrhea.
6. Tachycardia.
7. Auricular flutter.
8. Auricular fibrillation.
9. Heart pounds when lying down.

D.

1. Injected conjunctiva.
2. Glistening eye.
3. Stellwag.
4. Darymple.
5. Exophthalmous.
6. Discoloration of hands.
7. Erythemata neck and thorax.
8. Pigmentations.
9. Dry skin.

10. Curved fingers. (Not so valuable a sign).
11. Metabolic rate.
12. Goetch's test.

We call your attention particularly to sweating of the hands. Hands may be either hot or cold; all depends on the nervous state of the patient at the time of examination. This symptom also applies to only a certain group of patients. (In a patient suffering from an old nodular goiter, toxic, thin, weak, wrinkled—the skin will show marked dryness in place of being moist).

Short breath on exertion may be due to cardiac impairment, muscular weakness, or pressure.

Eye symptoms are of no value in the early development of goiter. It is a late symptom in about 20% of the diffuse type. This organic symptom is a family diagnostic point. The physician should have recognized the condition long before these symptoms appeared.

Early recognition of goiter is a problem of great importance to the patient. This suggests to us the question: If goiter, particularly the diffuse type, is recognized early, can it be cured without surgery? Many are answering the question affirmatively and, who knows, if we become skilled in its early recognition, that all will be of the same opinion. Consequently, the problem of early recognition is of great importance to the student of thyroid disease.

Interpretation of the symptomatology of acute hyperthyroidism is easy of accomplishment. Atypical cases tax the skill of the most learned diagnostician. Many of us are in the same position today in regard to thyroid disturbances as we were toward tuberculosis, thirty years ago. Unless the patient had frank symptoms of second stage tuberculosis, the disease did not exist. The same opinion relative to goiter obtains — unless the patient is dreadfully ill and has classical symptoms, he must be suffering from some other illness; certainly not goiter. Remember a patient can be sick from goiter and evidence few of the classical symptoms of the disease. This is the so-called irregular group.

The chief diseases to be differentiated from goiter are early tuberculosis, cardiac disease, neurasthenia and neuro-circulatory asthenia; not forgetting that goiter may exist with either of the above mentioned.

The basal metabolic rate has been considered a most valuable diagnostic aid. More and more, however, the trained student is realizing that its interpretation is less important. A patient may have a normal or a minus B. M. R. and be exceedingly ill from goiter. He may even have a slow pulse and a history of gaining weight. (Atypical case).

While tachycardia is the most constant and probably the earliest sign in toxic goiter, a normal pulse rate is not incompatable with the disease.

Neurasthenia is very difficult to differentiate. We shall offer you the following questions for your consideration: Can a patient be a neurasthenic and suffer from goiter at the same time? Does neurasthenia prevent the development of goiter in an individual? Are patients being denied the right of treatment for goiter on account of the presence of neurasthenia?

Pressure symptoms have been discussed —often incorrectly. Small, hard, diffuse goiters produce pressure much more often than the large colloid. It squeezes the trachea and produces a definite discomfort.

When there is pressure in the neck, if the patient complains of a "lump" or "ball," look out; but a constant, actual pressure, constricting at times, must be considered of importance and of some value.

No discussion of the problems of goiter is complete unless special mention is made of iodine. When and how to give iodine is a question that is often put by the physician and the reply is not always so easily understood, since many statements made by us seem to him a paradox.

Let me warn you not to put too much dependence in iodine. Cases are being placed in the mortality column by such confidence. Not a few hospitals, soon after the adoption of pre-operative iodine prevention, recorded higher death rates. In the critically ill rely more on rest, medication, food and liquids and most of all do not be in a hurry to operate. Iodine can be administered to the acute cases and no harm will result; in fact, it is good treatment and can be continued at intervals for some time I do not think that it has been the fault of the administration of iodine that has caused the surgeon so

much trouble, but too much reliance in the agent itself and the neglect of other preparatory measures that have in the past served us so well. "Iodine tolerance," following its administration to acute cases, is more fancied than real. Increasing experience seems to have justified this opinion. These cases are quite similar to those seen heretofore, before the new epoch of iodine prevention came into vogue. Forget the humbug about "tolerance." It is all wrong. If the bad risk patient improves, return him home for a while, until improvement takes place sufficiently to place him in the operative group.

We should remember that iodine rarely, if ever, cures goiter. Some patients undergo a remarkable improvement. Many of the so-called "cures" show a tendency for a recurrence. The distinction between the treatment with, and the prevention of diseases of the thyroid gland with iodine is not fully understood and appreciated by our profession. Confusion and misunderstanding exist among the people. They have interpreted the prevention by means of iodized salt as a curative measure and are taking iodine in the hopes of relief. Do not give iodine, of course, to the nontoxic case, as it will do no good. In the child with a soft fullness in the gland, reduction in its size will take place from its administration, but do not expect a cure, for sure as fate, nodules will appear later in life.

Massive doses of iodine seem to be responsible for so-called "iodine damage"

Compulsory administration of iodine in any form is not acceptable to the American people. Iodized salt should be popularized, even though these small doses might be provocative of harm to a definite percentage of individuals. If iodized salt could be used by individuals not affected with goiter, in every household, it would prevent the development of goiter in the second generation.

Regulation of so-called, well advertised "goiter cures," containing large quantities of iodine, would prevent many of the so-called cases of iodine basedow. If these advertisers could be checked in some manner, much good would come to the individuals suffering from goiter.

Definite results have been shown by Kimball and others in the prevention of thyroid conditions. European countries confirm their results.

One of the simplest manners to administer iodine to children is two grains of sodium iodide twice a day for two weeks, twice a year. Notice the twos.

One of the problems is to take the information of the prevention of goiter to the doorsteps of every doctor in our country. We must interest them in the subject of prevention, consequently the problem that shall have to do with the dissemination of knowledge relative to the means and methods of prevention is of greatest importance.

Marine's aphorism, "one milligram of prevention is worth more than a thousand milligrams of cure," is apropos. z

Agencies that may be used to put forth such measures are:

1. More papers should be read before organizations, both local and national, relative to the prevention of goiter. In fact, the subject should be discussed at every medical meeting of importance, particularly the obstetric and pediatric societies.

2. *Obstetricians*: Obstetricians should be urged to remember that the presence of goiter in the mother is of great importance in the genesis of congenital goiter in the offspring. An observation in Colorado Springs, with families in which we have been able to study the hereditary feature in three generations, proves quite conclusively the more common occurrence of goiter in these families.

It is the duty of the obstetrician, pediatrician, practitioner, as well as the surgeon, to learn the symptoms and recognize not only the hyper, but also hypothyroid states in the expectant mother and administer for the latter condition thyroid extract and, if you please, iodine, and thus in a measure safeguard the heatlth of the prospective offspring. He should bear in mind that not only hypo but also hyperthyroidism produces sterilization and, furthermore, that either or both may produce the procreation of physically undeveloped offspring. Many have noted that the administration of thyroid extract and iodine in some form to sterile women has resulted in pregnancy, and its beneficial effects are also noted in habitual abortions and in groups in which lues has been excluded.

Prophylaxis should be begun before birth of the child. Probably better be instituted by administration of iodine to the goiterous parent before gestation

takes place. Certainly it should become his duty to administer this prophylactic measure during gestation and throughout childhood.

Early recognition of congenital thyroid disturbance and the prompt administration of thyroid extract to this group seems all we can do to prevent (in a great measure) mental retardation and certain physical stigmata which are so certain to develop in children whose parents suffer from endemic goiter.

What a tragedy for the family and a remorse it must be for the physician who failed to administer iodine and thyroid extract to the expectant mother of such procreation. In our own surgical experience we have observed many such examples. For instance, mother afflicted with goiter and deaf-mutism. Her only son and daughter; both fine in physical stature, daughter a beautiful character; both are deaf-mutes. Parents admitting no knowledge of the whole affair.

Many such tragedies are being enacted throughout the states, and not necessarily where endemic goiter exists. Goiterous parents should be advised of such exigencies and instructed to safeguard their offspring.

It is to the discredit of this group of well informed men that so little is being done in a prophylactic way for those who must bear the burden of gestation and bring into existence a host of little sufferers who must face the stigmata of an inherited physical and mental weakness throughout life.

3. *Public Health Officials*: Goiter has attained proportions in America of a public health problem and means of prevention should take a prominent place in affairs of our city, county, state and national health bodies. All cities and many small towns maintain health boards. All states have health officers. It should be their duty to study this group of mentally deficient, tardy in their school work—also the mothers, for hypothyroidism.

Nothing should be left undone to arouse the enthusiasm of the people to this impending danger. A condition so well known to European countries, who are already overburdened by this shameful calamity.

The function of the department of health should be to inaugurate surveys and to instruct the public in the causes of goiter and established principles of prophylaxis, furthermore maintain follow-up surveys to determine the efficiency of such plans of prophylaxis.

Health departments have exerted a tremendous effort to build up community immunity to diphtheria. Goiter prevention can be accomplished in a much more simple and safe manner, still the subject is rarely, if ever, mentioned in campaigns of prevention.

Since prevention has been proven a surety, our health departments should beget themselves about this most serious business and thereby checkmate this impending calamity of no mean proportion.

4. *Government Boards of Health*: Every country, state, province, county and municipality, as well as the public schools, should work under a goiter commission. Some of the European countries are demonstrating the value of such commissions. With our excellent health boards throughout America, its organization would be of easy accomplishment. The additional duties, to our already efficient and well organized health departments, would be of small moment.

5. *Pediatricians*: If the thyroid gland plays an important part in the physical and intellectual growth of the child, surely this fact should furnish much study and effort for the pediatrician. Preschool age must be under the influence of the pediatrician or family doctor if the child is to have the advantage of ideal prophylaxis and the nation is to be relieved of the physical and mental suffering (and death), besides the assumption of economic responsibility of caring for a group of cretins, idiots, and deaf-mutes.

6. *Child Welfare Organizations*: During child welfare week much discussion about, and free preventive treatment is given for diphtheria and other similar conditions, and no mention is made of measures to prevent the development of goiter and its resulting direful consequences.

7. *Schools and Universities*: Educational influences must be utilized to spread knowledge of prevention. It is the duty of health boards to undertake to promulgate the principles of prevention in this particular field of endeavor. Public schools offer large opportunity for inaugurating a plan of prophylaxis of goiter in children.

Public schools are in touch with probably 90% of the children of the country,

thus furnishing ample opportunity for free administration of preventive treatment twice a year at an age when most good can be accomplished. Children are anxious to be well and virtually all would elect to take this safeguard if the matter was put forth to parent and child alike. Very few would object to the plan. This procedure would touch all America, since compulsory education obtains throughout the country.

In our periodic health examination of school children much has been done to vaccinate against small pox, recommendations for adequate treatment for diseased tonsils, chest conditions, etc., while nothing has been done to initiate prophylaxis against goiter.

Applicants for instructors in the public schools are given physical examinations to determine if they are free from contagious diseases. Applicants are rejected if such contingencies exist. Little or no attention is given to the instructor affected with goiter. Such an individual, suffering from a deformed neck with its accompanying nervous tremor, etc., is a poor example to the child of the serious consequences of the existing malady. Certainly it leaves the impression on the observing student that the condition is of no moment (by daily contact). Such a teacher should be advised that the stress and strain that goes with the arduous duties of an instructor is not compatible with an individual suffering from goiter. Employment should not be interdicted, but the serious consequences should be put clearly before such an individual.

8. *Hospitals and Clinics*: In the outdoor maternal departments of hospital dispensaries (out patients) special mention of goiter prophylaxis should be made to mothers who come for advise as to prenatal care. This instruction would aid materially a group of individuals who have no opportunity to learn of the harmful effects of goiter on their offspring in any other way.

9. *Surgeons and Physicians*: Of great importance is the interest of the physician at large. It is he who comes in contact with the people generally, hence his influence is of great value on account of his daily contact with the entire population, and at ages when preventive measures can accomplish the most good.

The attention of the medical profession is called in a general way, because so little is being done by them to prevent the occurrence of goiter throughout America. A small but distinguished group of specialists are devoting themselves in a most generous fashion to stamp out the malady. If results are to be obtained all must assume the responsibility.

10. *Press*. There should exist a willingness on the part of the physician to develop a better mutual understanding with representatives of the press—"the most potent force affecting modern life."

The public is being taught that many diseases are preventable and they are learning that it is of much more importance to keep well than they heretofore realized. The press has done much by its cooperation with the medical profession to bring this much desired situation. We, as physicians, must admit that our hesitancy and reticence was in a measure responsible for the slow manner of disseminating such knowledge in this manner to the public and for this reason, no doubt, the quack and faker found easy sailing in peddling his wares and the public became informed about matters of medicine not founded on fact but misrepresentation and greed.

The press is interested in its readers and ever ready to safeguard the welfare of the nation's greatest asset—HEALTH.

The layman is not only desirous of acquiring the knowledge of the possibilities of preventive medicine, but demanding the information about medical and health matters and he is looking more and more to the press for this information as the press is the medium from which most of his knowledge, scientific or otherwise, is derived, for the daily press is consulted and read more consistently, probably, than all other literature of the world, and hence is more instructive than all other combined agencies.

If we are to enhance our usefulness and extend our helpfulness in preventive medicine, we must appeal to the press.

Both physicians and the press desire that the knowledge of preventive medicine be given to the peoples of the world. That neither of us can do much without the aid of the other must be admitted.

In considering the problems of goiter, I would especially like to make mention of the patient suffering with serious cardiac disturbances. This group is worthy of special mention. Many are quite ill,

some are cachectic, emaciated, suffering from dyspnea, while others are edematous to marked degree. Rest, proper food and medication will place most of them in the operative column. I shall suggest only one drug that, to me, has accomplished more than all others in the dropsical types. I refer to salyrgan, administered in an intravenous way. Barring sedatives, it will supplant all drugs—even digitalis can be dispensed with until the fluid has disappeared. The effect of the drug is marvelous, the results are magical. It seems to benefit this group of individuals in a selective manner. May I suggest the advice not to ever discard a seemingly hopeless cardiac of goiterous origin until this drug has been well tried out? If the group can be brought to operation, the procedure is quite safe, the improvement is rapid and definite, and the thyroid state is not existent. Some of the damaged hearts do not entirely recover, but the patient is in a liveable state.

May I say that the status of surgery is a late day treatment? The disease has progressed over a long and definite period, before it becomes necessary to operate. In the early stages the disease might possibly be medical; late in the day, however, the condition is surely surgical. Not necessarily that the disease will destroy its victim, or permanently cripple him, but the law of averages is such that the condition should be classed as surgical; and certainly should be considered so as confidently and wisely as appendicitis or gall stones is considered surgical. Not all the individuals affected with the above two conditions will end in disaster if not subjected to operation, but none will question the wisdom of the course in such conditions. Consequently, such should be the attitude of the medical profession in a well developed case of goiter.

Pre-operative, operative technique and post-operative treatment are not germane to this discussion. However, I would like to suggest that surgeons doing occasional operations for goiter should refer the more difficult and seriously ill patients to the more trained surgeon. There are two good reasons for this—first, it gives this class a better chance for life; and second, it lowers the mortality in his individual work, thus safeguarding his reputation and lending encouragement to a large group of patients who are suffering with thyroid disease.

DISCUSSION: *Dr. Robt. M. Howard,* Oklahoma City.

I feel that we have been very greatly honored today in having Dr. Shivers give us this paper. Dr. Shivers, you know, is the president of the American Association for Study of Goiter. He came here and gave the type of paper we felt he would give. We hear too many papers on the technique of operation, etc. He has covered the subject in a very broad manner, and I think a manner which is of interest to all of us, whether physician or obstetrician, or general man, or whatever line of work we may be in. I am very pleased indeed to have been able to listen to a paper of this type, because I feel that to organizations such as this it is of considerable importance. Dr. Shivers covered the subject rather widely, and the emphasizing of some of the points he has made is all that I want to do. He spoke of the classification of goiters. For a long time we have been insulted with a long classification of goiters that none of us could tell and that didn't mean very much to us. In the study of any disease, a simple classification means a lot, and after a good deal of study and work the general classification or classifications of clinical types of goiters have been reduced to a very simple classification and one that I think gives a better conception of the subject. The diffuse type of goiter without toxic symptoms, the diffuse toxic goiter, the nodular type of goiter without toxic symptoms, and the nodular toxic goiter covers the whole subject. We are able to place our cases in one classification or the other. Dr. Shivers spoke on the cause of goiter. Intensive study is being made all over the world on that subject today. There is a lot that we do not know about it now. Contributing causes we know exist, but the actual cause of the condition itself we do not know. Perhaps in the typical case of toxic goiter, whether the diffuse or nodular type, the diagnosis is quite important. The questionable cases are those that we have difficulty with. I think in men doing a great deal of work, people come to them for their work, If you operate a patient in the neighborhood, whether in the city or the country, you are going to have three or four women from that immediate neighborhood who are more or less disposed to be neurotic coming in. They tell you, "Doctor, I have had a choking feeling lately." "Choking is not a symptom of toxic goiter; it occurs only

in large goiters or in the type that produces pressure on the trachea. But when your patient tells you that she has choking you have to work them out completely, but you can venture half of the time there isn't a goiter at all. That is not a symptom of goiter. The symptoms are fairly characteristic. One point I mention and that is this, in dealing with this early type of toxic goiters it is of importance, as Dr. Shivers brought out, that we recognize them as early and deal with them before damage has been done that will prevent the patient from returning to normal following any operative procedure that may be advised. It is important to diagnose them early, but I believe it is of more importance to wait until your questionable case has developed the typical symptoms before you attempt to do surgery. Otherwise you are going to be operating a certain number of patients that you won't do any good. Early recognition of tuberculosis, cardiac conditions and particularly neurasthenia in distinction is pretty hard, but I am satisfied that if your patient has and is developing a toxic goiter, if you wait a while those questions will become unquestioned. It isn't any fun to go through the operation with its many dangers and establish that our patient was not suffering from what we operated for. I don't place too much dependence on the basal metabolism. Probably often goiter may be diagnosed that way, but it varies so much in individuals and so much in the different nationalities that except from confirming what we already know and believe, I doubt that it is worth very much. Iodine in goiter is a question of extreme importance. In prophylaxis it is the most important thing we can do. Unfortunately, it has been greatly abused in the treatment of toxic goiters and as a result many of the patients who are coming to us are difficult to prepare for operation. Now, I think the physician who sees the goiter patient first should decide definitely how he is going to take care of that patient. If the patient is toxic we may believe the best thing is submit him to an operation, the patient may not believe that and he may believe it. If you are going to submit him to surgery, don't give him iodine except ten or twelve days before operation. If you are going to treat him, go on and give him iodine. I think these people with toxic goiter are better off to get iodine than to do without. That is contrary to the prevalent opinion; it is rather thought that if you give people with diffuse goiter iodine that you are going to do them a great harm. I think it is a fact that they are better off taking iodine than without it. They will be much better off if they ever had it if you continue with it. Decide on these patients. If you are going to have them operated don't give them iodine but if you are going to treat them it is all right. One other point he didn't go into very extensively, and that is prevention of goiter. To obstetricians and health officers that is of extreme importance because goiter is a condition that is unquestionably increasing in our country and unless it is checked we are going to have what we see a great deal of in Switzerland—we are going to have a lot of cretinism. That isn't something that comes on after one or two generations, but let them go a little longer and you are going to see more of it. You don't see many now, but visit Switzerland or the Himalaya mountains and you will see the terrible burden caused by the development of cretinism. One of our important problems today is the prevention of goiter.

Question: Two years ago we were told that every pregnant woman should have iodine. I should like to ask when should thyroid be given to apparently normal woman, and what does the basal metabolism reading have to do with it?

Dr. Shivers: I feel that my paper was hardly suited to a section. I prepared a general paper because I was under the impression that all met together in a general assembly. Now this question, under what condition would you give a healthy expectant mother iodine. In a perfectly healthy, normal, expectant woman I wouldn't give her iodine, neither would I give her thyroid extract. In hypothyroidism I would give her thyroid extract and maybe iodine. The basal metabolism is elevated during pregnancy, so a normal increase in basal metabolism would not be an indication for either thyroid extract or iodine.

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Oscar Richter, Arthur E. Meyer and Andrew C. Ivy, Chicago (Journal A. M. A., May 7, 1932), have prepared an extract of horse liver which is low in total solids (1.8 Gm. from 100 Gm. of raw liver) and of which an oral administration induces a complete remission in pernicious anemia. A preliminary study of the comparative concentration or potency of the antianemia principle or principles active in pernicious anemia present in horse and cattle liver suggests that the concentration may be greater in the liver of the horse.

CAUSATION AND MANAGEMENT OF SIMPLE GOITER*

JAMES W. HENDRICK, M.D.
AMARILLO, TEXAS

Disturbances of the thyroid gland have commanded the attention of the medical profession for many years, but in general, it may be said that consideration was given only to the toxic conditions. Less thought was directed to the management of the supposedly innocent goiters of adolescence. It seems reasonable, in order to prevent toxic goiter of later life and conditions of hypothyroidism, care of early goiters is of paramount importance, especially in this era of preventive medicine.

Bram conservatively estimates that over five million people in the United States are suffering from goiter. It is true that this section of the Southwest is not in the great endemic areas as: the Great Lakes Basin, Minnesota, Washington, Oregon, and the Dakotas, but the condition is prevalent enough that some thought should be given to its prevention and management.

Too often the slight swelling observed on the necks of high school girls is ignored, and parents are assured that by taking a little iodine, the patient will outgrow the condition. But the effects do not go away so easily, although the swelling disappears. There may be functional and circulatory changes that produce permanent pathological changes in the gland, and under the stimulus of infection, overwork, pregnancy, or continued deficiencies in mineral salts and iodine, adenoma or Graves' disease develop.

In reviewing the histories of toxic adenoma patients, it is found that a good percentage have had a juvenile or adolescent goiter.

In the United States there are more deaths attributed to cardiovascular disease than any other general classification. Sloan contends that at least eighty per cent of cases of cardio-vascular disease are attributable to goiter in one form or another. It has been shown that cardiac decompensation associated with hyperthyroidism quickly regains cardiac compensation, when the thyroidism is removed; whereas, cardiac decompensation due to other conditions, as intra cardiac or cardio-vascular-renal origin, does not regain compensation readily. I have seen these patients so decompensated that they were laboring for breath, and were even unable to lie down comfortably. Ordinarily they would not be considered possible candidates for any type of surgery. With a few days of cardiac management, a subtotal thyroidectomy may be performed with an uneventful convalescence, and they are able to resume their economic activity within a short period of time.

Thyroid dysfunctions produce perhaps more mental degeneracy than any other disease. We will not discuss the psychosis associated with hyperthyroidism, but with the sub or hypothyroid conditions. Clinically, we find the excitability of the whole vegetative nervous system diminished; this will vary with the amount of hypothyroidism present. Also, there is a slowing down of the entire metabolism. Breitner states that, "after five generations of colloid goiter, we can expect to find deaf mutism and idiocy." That should suggest that the expectant mother who has a colloid goiter, or evidences of a hypothyroid condition, should receive appropriate treatment to prevent the child from being a hypothyroid at birth. This was clearly shown by a case seen with an associate. He had under his care three children that demonstrated many of the clinical signs of hypothyroidism; such as, mental and physical retardation, broad spade-like hands, short little fingers, pot bellies with umbilical hernias, dry skin, coarse hair, large thick tongues, drooling of saliva, and delayed ossification of the wrist bones. The mother of these children had a large colloid goiter, and she also had the clinical signs of hypothyroidism of an adult, with a basal metabolic rate of minus 32. During the next pregnancy, she was given thyroid therapy, and the child was normal in every respect. Following this she moved away from the locality, and within the last month consulted this associate with another child, a very definite cretinoid. She neglected to take thyroid therapy during this latter pregnancy. Dr. E. P. Allen of Oklahoma City several years ago was giving considerable thought to the problem of thyroid deficiency of pregnancy. He was taking the basal metabolic rate of his obstetrical patients, and administering thyroid therapy to the cases that were in need of it. This seems to be a step in the right direction for two reasons: first, it

*Read before the Oklahoma State Medical Society, Tulsa, Oklahoma, May 25, 1932.

will prevent the child from being a hypothyroid at birth; and second, it may prevent the formation of a colloid goiter during pregnancy, or the stimulation of a nontoxic adenoma to that of a toxic adenoma. A good percentage of these patients state they had a nodular goiter without symptoms, but following one or more pregnancies, toxic symptoms developed.

In reviewing the literature as to the causative factors of this affection, one is impressed with the various theories, and the vast amount of clinical work to support each theory. Also, one factor that may be of the utmost importance in the causation in one country, would be of only a secondary importance in another.

Breitner reports a family that moved from Germany to a place between Vienna and Budapest. Within a short time the parents, the five children, and the domestic animals (cat, dog and jack ass) all had developed goiter. On investigation, he found that they received their drinking water from a well on the premises. He advised boiling the water, and within a short period of time all of the goiters had visibly disappeared, only to reappear when they again used the water unboiled. Analysis of the water revealed that it contained over ten thousand parts of iodine per billion, which is sufficient to prevent goiter.

Goiter is quite prevalent among Mexican girls in Las Vegas, Santa Fe and Roswell, New Mexico, but it is quite rare among the white population. Both receive the same water supply; so it could not be incriminated. The sanitary and hygienic conditions among the Mexican population are very poor. They live in small houses, which are poorly ventilated, and are overcrowded—often the whole family living in one room. Also, their diet is radically different from that of the white population, there being very few vegetables, fresh fruits or milk used: but a preponderance of proteins in the form of meats and beans, and carbohydrates in the form of corn meal preparations.

McCarrison is an advocate of the toxic infective theory, and he has had extensive experiences in India to substantiate his beliefs. One of his experiences is worth recounting. In Sanwar, Punjab, a small village, practically the entire population had goiter. The substitution of a pure for a contaminated water led to the disappearance of the goiter. The pure water showed on analysis to be practically free of iodine; whereas, the contaminated water had a substantial amount of iodine. He came to the conclusion that there was a positive toxic agent derived from the gastro-intestinal tract, and there was not an iodine deficiency; that the toxic agent may be capable of fixing the ingested iodine in the intestinal tract, and prevent its absorption. The iodine content of the water was sufficient for physiological needs. He often employed intestinal antiseptics as thymol and salol, or endeavored to change the intestinal flora with bulgaricus bacillus.

In the United States the iodine deficiency theory seems to have the most adherents. Our population is iodine minded; that is, iodine is used indiscriminately by both the laity and many of the physicians. They do not realize that iodine is indicated only in certain types of goiter, and that it should be used judiciously under the supervision of a competent physician.

Kimball working with the Michigan State Health Department in 1924 made surveys and water analyses in several counties, and found that the incidence of goiter in Houghton county, where the iodine content of the drinking water was nil, to be 58 per cent among the boys and 70 per cent among the girls in the schools. While in Midland county the iodine content was 7.3 parts per billion, the incidence of goiter was 24 per cent among the boys, and 41 per cent among the girls. Iodized salt was used in the homes of the school children in the city of Midland, and in 1928 another survey was made. It was found that the incidence of goiter had fallen from 41 per cent to 8.8 per cent among the girls.

The theory of mulitple causation seems most practical; such as, water pollution, dietary, iodine and mineral salts deficiencies, overwork, infections, insufficient hours of rest, and rapid growth.

A deficiency in iodine could not be the sole cause, for in the case of Houghton, Michigan, where the iodine content of the water was nil, there were thirty per cent of girls and forty per cent of boys not affected. McClendon found where there was a scarcity of iodine in the water, there was also a scarcity of iodine in the green vegetables grown in that vicinity. Kimball reports the case of a boy that grew almost a foot in a year, and developed a very definite goiter, even though he was taking iodine.

Simple goiters should be divided into two classes: parenchymatous and colloid. If this classification is recognized, better results will be obtained in treating them.

A parenchymatous growth is a gland trying to increase its function by enlarging. This enlarging may be by the production of new tissue, hyperplasia; or by increasing the size of the tissue present, hypertrophy. There is a decrease in the colloid material, the lining epithelium is of the low cuboidial type, and later columnar, and there may be infoldings and plications. There is a symmetrical enlargement of both lobes and isthmus. This is the earliest form of goiter, and when found in males, may persist into young manhood.

Colloid goiter develops in the above form when the individual reaches the late teens, or young womanhood, or during pregnancy. There is a storage of colloid in the acini, the lining epithelium is flattened into the low cuboidial type, by the distension of the colloid. There is a symmetrical enlargement of both lobes and isthmus, and the gland may be from two to ten times the normal size. Pressure symptoms are seldom present. Its consistency is soft or elastic. There is usually a mild hypothyroidism, and the basal metabolic rate is below normal, from minus five to minus twenty-five. There is an absence of bruits, pulsations, or throbbings in the gland.

Occasionally it is necessary to differentiate between the above forms of goiter and foetal adenoma. The latter belongs to the classification of true tumors of the thyroid. They usually appear as solitary nodules, resting on normal thyroid tissue, and may be observed in very young individuals. The tissue of the foetal adenoma is about the same as that found in the thyroid of a four months foetus. The growth of the tumor is very slow, but persistent, and is not subject to the periodic progressions and regressions that are common to the normal thyroid gland. As growth progresses, there may be degeneration and cyst formation, or it may become slightly toxic, or malignant.

MANAGEMENT

In the management of the goiter patient, it is imperative that the patient be under the constant care of the family physician.

Control of infections, both systemic and local, and correct constipation if present.

If the water supply is polluted, use boiled water and intestinal antiseptics; such as, salol and thymol, or change the intestinal flora with bulgaricus bacillus.

See that the patient has a liberal diet, including fresh green vegetables, fresh fruits, butter, cheese, eggs, whole wheat bread and sea foods.

Sufficient rest, if necessary a rest period in the mornings and afternoons, and moderation of exercise.

If the patient has a parenchymatous goiter of puberty, iodine is of distinct value, and can be given in one of the many forms. In the younger children the syrup of the iodide of iron, 5 minims in a suitable vehicle daily is preferred; Lugol's solution, minims 2 daily in alternate months for older children.

The presence of a colloid goiter demonstrates that the function of the thyroid is below normal, and by supplying thyroid substance, we can rectify the deficiency and eliminate the goiter. Thyroid extract and thyroxin should be administered, care being observed not to get a thyroid intoxication. The taking of the basal metabolic rate at frequent intervals should be of value. Usually a colloid goiter will disappear under this treatment within six months to a year, but the patient should be under constant observation for two or three years.

If the obstetrical patient has a colloid goiter, she likewise will respond to the above type of therapy. However, it should be remembered that the basal metabolic rate is increased after the sixth month of gestation, and is about plus 15 to plus 20. If there is clinical evidence of hypothyroidism present, administration of thyroid extract to the mother will prevent the child from being a hypothyroid at birth.

CONCLUSIONS

1. The management of simple goiter is often neglected.

2. The obstetrician can prevent congenital hypothyroidism by appropriate treatment of the expectant mother,

3. The theory of multiple causation of simple goiter seems most practical.

4. The indiscriminate use of iodine in the treatment of goiter is detrimental.

5. Better results can be obtained in treatment if a differentiation is made between parenchymatous and colloid goiter.

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DISCUSSION: *L. S. Willour, M.D.*, McAlester, Oklahoma.

I want to discuss briefly the pathology of goiter as discribed by Aschoff. The goiter problem is centered in that of diffuse goiter. This diffuse goiter is intimately related to the physiological variation in the development and in the functional activity of the normal thyroid gland. In a study of the material at John Hopkins Hospital, it was determined that following the hypertrophy and hyperplasia of the new-born, after puberty and after pregnancy, there occur involutional changes in the thyroid gland. These involutional changes are within certain minor variations similar to those of hyperthyroidism. The milder the degree of hypertrophy and hyperplasia the less obvious are the histological changes of involution, but though slight, these changes are just as definite.

These histological changes of involution are educed as the structure of the gland approaches normal or undergoes a regression following physiological over-activity. The fact that these manifestations of histological activity occur at certain periods in the life cycle, would seem to indicate that these changes are secondary instead of primary, the cause of the physiological enlargement of the thyroid gland being extraneous. The gland enlarges primarily as the result of hypertrophy and hyperplasia, and an increased circulation through it and is further enlarged as the result of subsequent involutional changes.

It has also been observed by Aschoff that beginning with the puberty hypertrophy, nodules or tumor-like masses first begin to make their appearance in the thyroid gland and continue to increase as to number and size during puberty and in the later periods of life. The incidence and average number of these nodules or tumors in the thyroid gland is the same whether the gland comes from a goitrous or a non-goitrous region. The only difference between them being solely one of actual size, consequently, a quantitative and not a qualitative difference.

Aschoff believes that the formation of these tumors, which he calls adenomata are secondary to that of diffuse goiter. He further states that this tumor formation always occurred with, or followed, but never precede the diffuse enlargement of the thyroid.

With this explanation of the pathology of simple goiter, it would appear that the position taken by the essayist in the management of the goiter patient is well-founded, as all extraneous irritations should be avoided whether they be from focal infections, intestinal toxemias, impure water supply, or dietary errors, and the close observation and proper management of the patient with any disfunction of the gland is imperative.

Thyroid changes may be a dominant factor in the production of sterility, miscarriage, and certain toxemias of pregnancy. Pregnancy has an influence on the thyroid gland. Even thyroids usually called normal are subject to both anatomical and functional changes during the course of pregnancy. As a rule there are no indications of a change in function, but in a small percentage of cases there are symptoms such as nervousness, tachycardia, insomnia, headache, and an increase in the blood pressure suggestive of mild hyperthyroidism but without loss of weight or a definite increase in the metabolic rate above the normal. When this syndrome occurs it is noted between the fourth and sixth months of pregnancy. It lasts for from four to six weeks if not treated, but responds to iodine in a few days.

Pregnancy beginning during a phase of hyperthyroidism and continuing is rare, Hyperthyroidism favors miscarriage, usually in the first three months. Patients with a history of toxic cycles have a tendency toward recurrence of hyperthyroidism during pregnancy.

The pregnant woman with hypothyroidism presents a picture of mixed endocrine disturbance and is subject to toxemias, edema, albuminuria, hypertension, preeclampsia, and eclampsia.

DISCUSSION: *Question.*

In complete removal of a very large goiter a few months before conception, what effect might that have on the child, or is the mother to have treatment?

Dr. Grosshart, Tulsa.

This paper is a very interesting one and one on a condition that has given a great deal of anxiety. There is one aspect I think we have all lost out on—the hypothyroid conditions. There are so many of them and they range from just a mere overweight or overfat to where there are heart symptoms, slowness of the pulse and all those. If you run a basal metabolism on them you find they are all a little bit minus, and if given thyroid or thyroxin, some of them will improve and some will not. The patients that do not improve—and you stand a chance to run the same test on all of them to find out whether they will or not, run a urinalysis and find whether the amino acid is above or below normal, and you will find out which patients will respond to thyroxin and which will not. It is a simple matter, but it is a thing that has not been done. I recently read a report of patients that had been tested by the basal metabolism, and the literature spoke of those that respond and those that do not. By having a complete laboratory report you find that those who do not respond do not have a surplus of amino acids.

Dr. I. W. Bollinger, Henryetta.

I have been here two days and heard thyroid from bottom to top. When I came up here I thought I knew something about thyroids but I have decided I do not. They may be big or little, hard or soft; the patient may have a normal pulse or a fast pulse, you may have amino acids in the urine and you may not. I would like for this gentleman from Amarillo to tell us how you know a thyroid when you see it. You say the basal metabolism reading is no good. The pulse may be fast or slow, and this and that and the other, and I would like for some distinguished gentleman with superhuman powers to tell me how you are going to know a hyperfunctioning thyroid or a thyroid that is not functioning, how are you going to know one when you see it. I am very sincere. I don't believe you can tell from the discussion in the papers whether you have a thyroid or not, or whether to operate or not to operate, whether to give iodine or give no iodine. I would like for somebody here to give us a clear conception of the idea, whether you have a thyroid that is diseased or not diseased. How would you recognize it?

Dr. L. S. Willour, McAlester.

I have been asked to open the discussion on this paper, but unfortunately I was out when called upon. I have prepared a brief discussion of Dr. Hendrick's paper; I was fortunate enough to have had a copy of it before I came here.

(Dr. Willour's Paper) * * * *

This paper is of great valule to the general surgeon. At all times should we keep in mind the proper treatment of the patient who appears to present either hyper or hypo activity of the thyroid, and particularly should this be observed during the period of pregnancy. I want to thank you very much for this paper, I enjoyed hearing it.

Dr. Hendrick: Closing.

There are still a number of papers and we have not much time without encroaching on the time of others, which would be quite unfair, so all questions cannot be answered. You heard the definite classifications of goiter yesterday by the President of the American Goiter Association. Often these classifications are not recognized—we still think of them as non-toxic and toxic adenoma and Grave's disease. In relation to the doctor's question over here, when the patient becomes pregnant, if there is evidence of hypothyroidism I would give thyroid therapy in the form of thyroid extract or thyroxin. I am not going to attempt to answer Dr. Bollinger's question but we do know when we have a thyroid disturbance and when we do not. Also when surgical or medical treatment should be administered.

SOME PHASES OF HYPERTHYROIDISM*

JOHN F. PARK, M.D., F.A.C.S.
McALESTER

Hyperthyroidism is present in three states: (1) in those having hyperfunctioning adenomatous thyroid, (2) in those having exophthalmic goitre, and (3) in those to whom thyroid gland or adrenalin has been given; and according to some to a prolonged use of iodine. We shall concern ourselves only with the first two classes; viz, toxic adenoma and exophthalmic goitre.

Considerable controversy has arisen and the literture is crowded at the present time in regard to whether or not the syndrome of hyperthyroidism associated with adenomatous goitre is a disease entity separate and distinct from exophthalmic goitre, or whether they are variations of the same disease. Despite this, there is an unanimity of opinion that exophthalmic goitre is more or less acute in its onset and course, with periods of exacerbations alternating with periods of partial or apparently complete remissions. Conversely, the toxic adenoma is of a chronic, insiduous, slowly progressing type, and only after years manifests toxic symptoms. Meanwhile the patient undergoes treatment for early tuberculosis, chronic heart disease, nephritis, or essential hypertension which may be secondary manifestations of the ravages of the disease, the effect, and not the primary cause, of the patient's disability; meanwhile the true condition progresses unrecognized.

Plummer states that the function of the thyroid gland is to maintain a concentration in the tissues of 14 mg of thyroxin, or to elaborate and deliver to the tissues 0.33 mg of thyroxin daily. This thyroxin is a catalyst which accelerates the rate of heat production by elevation of the basal metabolism with a speeding up of cellular activity in general. We shall not discuss further the physiology or bio-chemistry of the thyroid except to state that it is assumed (Plummer) that in toxic adenoma there is an abnormally high concentration of thyroxin in the tissues which increases the basal metabolic rate, while in exophthalmic goiter the gland not only delivers an excess of normal thyroxin but that through some intense stimulation—be it through the sympathetic system or through a hormone in the blood stream—there is produced and delivered to the tissues an abnormal product of thyroxin. This abnormal product in addition to its power to raise the basal metabolic rate has the capacity through its toxic action to produce exophthalmus, the peculiar nervous manifestations and a tendency to a gastro-intestinal crisis so commonly associated with the exophthalmic type of goitre.

The association of exophthalmus with a zone of white sclera above the iris, a peculiar type of staring with fixation of the eye for a few seconds followed by rapid blinking, tachycardia, tremor, goitre, and elevation of the basal metabolic rate are considered primary or cardinal signs and symptoms, and are pathognomonic of exophthalmic goitre, while concomitantly there are symptoms of secondary importance none of which is pathognomonic but in combination may suggest the condition when the primary ones are not conspicuous or are absent during a remission.

Prominent among these secondary symptoms are "purposeless movements" (such as buttoning and unbuttoning clothes, crossing and uncrossing the legs, fidgeting with the face and hair, etc.), muscular weakness manifested by difficulty in walking up stairs or by the Lahey test of having the patient sit well forward on a chair and raising the leg to a horizontal position with the knee extended—rarely can they hold this position for more than 30 seconds while the normal subject can do so for from 40 seconds to two minutes—diarrhea with or without vomiting, loss of weight despite an exceptionally good appetite, heat intolerance with sense of increased body warmth and with marked sweating and vasomotor instability; menstrual change usually manifesting itself by diminution or cessation of the flow, increased force of the heart at rest, the various nervous phenomena, and others.

Too often a small toxic goitre is diagnosed as early tuberculosis, neuro-circulatory asthenia, or neurasthenia. There may be a co-existing tuberculosis and hyperthyroidism. If so, radical treatment of the goitre is indicated, and then the patient is in a much better condition to overcome the pulmonary lesion.

Hyperthyroidism and neuro-circulatory

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asthenia have many symptoms in common such as palpitation, tachycardia, tremor, and nervousness, but the asthenic is pessimistic in contra-distinction to the usual optimistic attitude of the hyperthyroid, there is not the tolerence to cold, nor the increase of appetite in the presence of weight loss. Instead of warm hands the asthenic's are cold and sweaty, and the basal metabolic rate is normal.

In the final analysis it is the well controlled and repeated basal metabolic rate that makes the diagnosis, except during a remission in an exophthalmic goitre when one relies on the previous history and the imprints left by the previous attack, among which are increase in size and firmness of the gland, pigmentation of the skin, edema, exophthalmus, etc.

On the other hand it is recognized that the metabolic rate will occasionally be found moderately increased in lymphatic leukemia, polycythemia, and pernicious anemia, but appropriate blood studies will bring to light the underlying pathology.

Hyperthyroid cases of course are subject to other surgical conditions at times, and unless the accompanying condition is one of great risk to life, thyroidectomy should have priority.

The treatment of hyperthyroidism is surgical after the patient has been brought to a maximum degree of improvement, and this immediately brings to mind the administration of Lugol's solution. It cannot be over-emphasized that in hyperthyroidism Lugol's solution is never given for its curative powers but solely for the purpose of preparing the patient for the operative ordeal. It should be given only after a preliminary metabolic rate has been determined and while under the observation of those who will carry out the surgical measures; otherwise a false sense of security may be engendered in estimating the postoperative reaction by not knowing the true condition before Lugol's solution had been administered.

Lugol's solution will not cure hyperthyroidism.

REPAIR OF UNUNITED FRACTURE OF NECK OF THE FEMUR

According to Paul B. Magnuson, Chicago (Journal A. M. A., May 21, 1932), it seems incredible that one who is familiar with the pathology of old ununited fractures would choose to use a spike or autogenous bone graft as a spike to fasten the trochanter to the head through a mass of heavy fibrous tissue with expectation of obtaining any considerable mechanical support. To begin with, the trochanter is pushed upward from three-fourths inch to 2 inches above the acetabulum; then there is more or less complete absorption of the neck so that the fixation appliance must bridge a considerable gap where there is no bone; the head is usually in a rotated position whereby the trochanter cannot be brought opposite the fractured surface; and, finally, after the displacement has occurred and contraction has taken place with the heavy fibrous tissue filling the gap between the trochanter and the head, it is impossible to pull the leg down far enough to bring the fractured surface on the trochanter and the fractured surface on the head opposite each other, to say nothing of bringing them into apposition. The ends of the fragments are covered with hard, smooth, fibrous tissue which has reached complete maturity, and to expect bone to grow from either end of the fracture is to expect the impossible; one might as well place two surfaces of skin together and expect them to unite without first abrading the surface. The author has seen patients who have walked after such a nailing operation has been performed, but he has never seen anything in the roentgenogram following operation which would warrant the conclusion that there was a bridging by callus between the trochanter and the fractured surface of the head, and he believes that the patient's ability to walk occurs as the result of unusually heavy fibrous tissue formation between the trochanter and the acetabulum, forming a fibrous support which will hold more or less weight, depending on its density and the area over which it extends. He has never seen normal motion after such an operation, and it seems quite impossible, considering the shallowness of the head and the length of the gap to be bridged, plus the condition of the healed fractured surfaces, that any hope of a normal hip could be expected. Whitman recommended removal of the head, clearing of the scar tissue between the head and the trochanter, and the fitting of a remodeled end of the shaft into the acetabulum. Brackett advocated an operation which in most cases serves to reestablish anatomic relations better than any which have so far been advanced. The results have been so satisfactory to both patient and surgeon that it would seem that this operation should be more generally advocated. The technic of the operation is described in detail. The operation reestablishes as nearly as possible normal anatomic relations, leaves the head covered with normal cartilage in contact with the normal cartilage of the acetabulum, and therefore results in a painless hip with much freer motion than can be obtained by any other method. There is little surgical shock connected with the operation, and in patients of normal expectancy it can be performed without fear.

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EDITORIAL

CHANGING THE MEDICAL PRACTICE ACT

Some time ago, after observing the impossible antics of certain members of their profession, the Oklahoma State Bar Association succeeded in so changing the law regulating their practice that the State Bar Association, itself, or through a board recommended by it could inquire into the fitness of any given individual to practice law, and, if the results of the investigation warranted, could revoke license to practice; the attorney in question, of course having the right to appeal to the Supreme Court. This, it is said has worked unusually well. More than 100 attorneys have been disciplined, and now they are walking the straight and narrow path, a course, in many cases heretofore unknown to them. The Supreme Court has held the legislative act to be legal and proper.

Thinking over this; looking around them and observing some of the acts of certain types of physicians, some physicians have concluded that a somewhat similar act applicable to the medical profession would improve that profession. No doubt it would. But the question at once arises as to the ability of the legislature to act as it did with reference to the attorneys. In the first place the two professions were somewhat differently situated. The writer has undertaken to look up certain phases of the law as affecting physicians, and finds the following, in substance, affecting physicians.

Originally, before there was any sort of territorial organization, the various Five Civilized Tribes created boards which functioned somewhat on the order of the State Board of Examiners of today. It examined and issued to physicians a license to practice in the territory of the particular tribe in question. Some time after that Congress passed an act dividing Indian Territory into recording districts, and the judge sittting in the recording district in question appointed a Board of Medical Examiners, which functioned largely as other boards do today. Then an organic act was passed, which in one place reads:

> "That the provisions of this act shall not be so construed as to invalidate or impair any legal claims or rights of persons, etc."

Later the Enabling Act was passed (the act permitting the erection of a State, etc.). It reads, in part as follows:

> "_____inhabitants may adopt a Constitution_____Provided that nothing contained in the said Constitution shall be construed to limit or impair the rights of persons or property."

Quoting the Constitution of Oklahoma, adopted under the above noted authority granted by Congress:

> "Bill of Rights (This is part of a Supreme Court finding as to a certain phase of the Constitution). "It is not depriving one of property without due process of law for a city to regulate by ordinance a business deleterious to public health, morals, safety or welfare of its inhabitants". Welcher vs First Presbyterian Church, 76th Oklahoma, 9, 184, p. 106."

Constitution, Section 39:

> "..... All physicians, dentists and pharmacists now legally registered and practicing in Oklahoma and Indian Territory shall be eligible to registration in the State of Oklahoma without examination or cost."

In other words the Constitution of Oklahoma validated, up to that time, the acts of various previously existing boards and acts and ordinances affecting physicians. Of course the Legislature was empowered to set up machinery establishing boards and did so, even to enacting laws by which licenses might be revoked, but the grounds were specific and definite.

We are under the impression now, that the status of physicians and lawyers was different, the lawyer was a part of the Court the moment he was licensed. He could be called to the bench in emergency to himself sit as a judge of the Court. The doctor seems to have had no such authority, he has merely a right to practice medicine, after he has complied with certain demands. For the above reason it is "our legal opinion" (worth a great deal, of course) that before we may pass an act affecting physicians as the act passed affecting attorneys, it will be necessary to change the Constitution, no small job I assure you, for on every hand the cult, the isms and the irregulars will be found lined up with the Christian Scientists opposing the act proposed, not for any particular reason, but simply because the medical profession may want it, therefore it cannot be a right act.

AS A MEANS OF POSSIBLE IMPROVEMENT, WHY NOT?

Speaking of moves to improve the quality of physicians, there is one possibility, which the writer believes would improve the medical profession as a mass, though it is believed it could only be made to apply to those who may hereafter apply for license to practice medicine. The Supreme Court of Texas, on one occasion, held, in substance, that a person once registered was registered for good. This arose out of the kindness of the State Board of Medical Examiners issuing a temporary license to practice, good for a short time only, the physician in question to come before the board and undergo examination at its regular date for that purpose. It is needless to say that that result probably ended "temporary licenses" in Texas, at any rate the physician refused to come for examination on the contention that if he was qualified to practice a short time he was qualified for all time. Now the point of all this rambling is that men are not qualified *all the time*, some of them hardly at all, but a certain percentage, when they receive their diploma and registration certificate, just quit, they know neither new editions or medicals books, current medical Journals, and clinics are just some sort of an unheard of thing to them. It is the writer's idea that it might be beneficial to the people of Oklahoma as well as to the physicians as a whole to be called upon at intervals of a few years to demonstrate that they have at least kept up with the ordinary improvements and new worth-while discoveries of medicine and surgery. The examination to demonstrate this qualification need, and should not be, technical, but should be very simple, one of such proportions and magnitude as to show that the man in question is averagely well informed and fitted for the neighborhood wherein he resides. Histology, pathology, physiology, and even anatomy might be entirely eliminated from the examination. All that would be necessary would be for the applicant to show that he was acquainted with the basic features of his daily work. He might be given a set of questions, which covered the symptoms, diagnosis and treatment of some of the commoner affections, with which the average physician is daily called upon to care for, and then asked, what the trouble was, what he would propose to do for it, and why. The sole object of this examination, and the law should so state, that it is for the purpose of determining if the physician examined is of average fitness for the community in which he resides, or if he has sufficient medical ability to be permitted to undertake the sacred role of attending physician and advisor to the ill. The board should be required to use ordinary common sense in its endeavors to ascertain the ability and fitness of the man examined. A few simple questions as to most affections will do this. It is important that a physician be able approximately to ascertain early, if he is dealing with malaria or typhoid, though the latter for the time being seems to be almost a thing of the past, whether the case is meningitis or hysteria, measles or scarlet fever, a sprain of the ankle or Pott's fracture, simple pharyngitis, tonsillitis or possibly diphtheria. These are the commoner

things the general practitioner contacts daily, but a certain percentage of us have grown into careless habits, these commoner things may be any one of a myriad of other and rare things, often unamenable to any treatment except a specific treatment, based upon careful, advanced diagnosis, so, unless the physician, after receiving his diploma and certificate from the State Board continues to pay rather regular and fixed attention to problems of medicine as set out in medical journals, monographs, etc., soon he is going to become a dangerous aid to the family, not from anything he may do, but from the things he leaves undone, from his growing, increasing and expanding stock of ignorance. A rehearing every few years, it would seem, might make some of them pay more attention to that most serious and difficult of all professions and callings —the practice of medicine.

THE SELECTION OF THE ANESTHETIC

One of the most important decisions often confronting the attending physician is the selection of the anesthetic to be used. As a rule, in the adult and among the "old-timers", ether is the anesthetic of choice, and it is often used when, due to the patient's peculiar affections, it may be a very perilous anesthetic. Nevertheless, all in all, it is probably the safest "all round" anesthetic in use today, excepting always the use of local anesthetic, novacain, etc., which should have no mortality, and it is certainly nearly never followed by the disagreeable complications seen in the use of ether. Ether may cause, though rarely, immediate death upon the table, or be followed by irritation of the bronchial tubes, amounting to acute bronchitis, bronchial pneumonia, acute collapse of the lung, hepatitis. It is doubtful if it may cause nephritis, there is no proof that it has ever caused nephritis, but formerly it was charged with that complication. Assuming, however, that ether does occasionally cause the complications above noted and that certain types of other anesthetics does not cause them, nor are they followed by the disagreeable complications sometimes following the use of ether, it is well for the surgeon to consider the matter, and, for the protection of his patient use the anesthetic best fitting the case.

The writer believes that blindly adhering to one type of anesthetic for use in any and all cases calling for anesthesia, is due, often, not to regard for the anesthetic used, but rather to the fact that the surgeon has fallen into the habit of using that with which he is most familiar, and to the further fact that he has not mastered the technic necessary to properly use other than ether as an anesthetic. The writer is furthermore very much prejudiced, or in favor of the use of local or spinal anesthetics, rather than any other, and believes from personal experience that most any operation may be performed with ease and safety by their use. I have had no experience with the use of avertin, though it is regarded very highly by those familiar with its use. Boehler of Vienna, who holds probably the largest fracture clinic in the world, has used local anesthetics only in a consecutive series of thousands of cases. There would seem to be vastly less shock in the handling, for instance, of a fracture of the femur by the use of harmless, local novocain, than by any other means. If the case may be completed in an hour or, as a rule in 90 minutes, and is of the lower extremity, certainly spinal anesthesia gives remarkably satisfactory results. The same case may easily be killed by ether, or have a complication leaving permanent and dangerous sequellae. Local anesthesia has one advantage not possessed by any other, and that is the element of time. One may literally take a day operating upon his case, if necessary, and there never need be any hurry about its use, when its effects have died out, simply inject some more. This is beautifully demonstrated in thyroidectomy, where the original skin incision is, at times, likely to become revivified before the operation is completed. The writer has never seen a fatality, or a near fatality due to the use of either local or spinal anesthesia, but I do recall several instances of postoperative days of coughing, rarely a postoperative pneumonia, occasional collapse of the lung, this followed in two instances by phlebitis.

As a final right to offer an opinion as to the type of anesthesia to be used, the writer recalls that he has been operated upon by everyone of the above types of anesthetics used, and, under no circumstances would he permit the use of ether upon himself. In the order named, and if applicable to the case, anesthetics would be requested by the means of spinal or

local-spinal for the longer and severer cases—local for those of lesser gravity.

FIFTIETH ANNIVERSARY OF FIRST REMOVAL OF GALL-BLADDER; SOME IMPROVEMENTS OVER THE PAST

The writer, a son of a physician, relative of many others of the same profession, recalls with interest the various progressive steps of medical and surgical advances, though, at the time hardly realizing "what it was all about", or the importance of the so-called new operations or endeavor. Among those recalled especially were the opening of the abdomen, in the then "out West," a most serious procedure, and, if successful, the making of the surgeon bold enough to undertake the work. All of these in Indian Territory, up to a certain time were performed in the face of grave emergency, that is, it was certain death if operation was not performed, and almost as certain if it was. A case is recalled where diagnosis of acute appendicitis was made on the first day, operation positively advised, and with equal obduracy refused; finally, when the patient decided he would be operated upon the surgeon refused to operate in the face of obvious wide-spread peritonitis, so the patient remained in bed for more than a month, for days death daily expected, but being Irish and full of resistence, by some freak of nature the enormously distended abdomen, with a respiration rate, due to pressure, unbelievably high, slowly subsided, the man got well without operation, of course, proving the surgeon wrong, and as not knowing what he was talking about. These freaks are occasionally seen by all men with more or less experience. Today we are concerned with the first operation for removal of the gall-bladder. Frankly decided upon in advance, worked out decision to do a cholecystectomy. This operation was performed by Carl Langenbuch*, then chief of the Lazaruskrankenhaus, Berlin, July 15, 1882. The article does not state the various data, history, etc., simply that he removed a gall-bladder, and that the patient recovered. All over the world, it seems simultaneously men began to do operations which had up to then been considered unusually formidable or positively "taboo." As reports began to circulate from one country to another the aggregate data was digested, the weak spots noted and eliminated, and soon rules based upon sound reasoning began to be applied to surgical conditions until it would have seemed that the last word had been spoken. However, it seems that there is no "last word", there are constant changes, constant advances and improvements. I recall the day when it was "fashionable" in abdominal surgery to use not less than three to five gallons of sterile or some form of antiseptic solution in the abdomen, to wash out debris, pus, blood, or "what have you?" After a time this gradually gave way to absolutely dry moppings, for the same purpose. Now at times there is a happy medium; occasionally there is a case where solutions are used and justifiably, but they are rare. The good things of yesterday are cast aside or improved upon, the cold glare of scientific reasoning is applied and rationalism rules, or is supposed to rule every manouvre or procedure. It has been one long day of continuous improvement, however, since the July 15 when Langenbuch removed the gall-bladder, the death rate in many things has almost wholly disappeared, the morbidity rate has kept pace with other improvements, until some fatuously imagine that the "last word has been spoken," that there can be no further advances. A moment's reflection should show us, if we apply the history of past events that probably there will be improvements all along the line. Medicine today is full of baffling, unsatisfactory results from the best and most accepted treatment. Slowly there will be improvements in these until finally that which today appears so baffling and irritating will be a matter of ease, and we will turn to some other problem.

*Archives of Surgery, July 1932.

ASPIRIN (ACETYLSALICYLIC ACID) NOT NECESSARILY HARMLESS

The general public and many physicians have come to regard "aspirin" as a generally harmless remedy. Doctors R. W. Lamson and Roy Thomas, Los Angeles, give a report in the Journal of the American Medical Association, July 9, 1932, which indicates that certain people have an idiosyncrasy, probably due to allergic conditions when this drug is used.

One case, age 53, complained of a cough, paroxysms of dyspnea with wheezing and frequent attacks of bronchitis. In this case, within a few minutes after admini-

stration of a powder containing acetylsalicylic acid the patient died. It developed that formerly a small dose of the drug had brought on severe paroxysms.

The second case, age 62, complained of identical symptoms. Upon the advice of a friend she tried one 5 grain tablet of acetylsalicylic acid; the reaction was immediate and severe.

The third case, age 55, complained of recurrent attacks of itching of the nose and sudden nasal obstruction; frequent attacks of dyspnea with wheezing and a cough. In this case one tablet of acetylsalicylic acid produced a sever attack of dyspnea which required epinephrine for relief.

The fourth case, age 51, had symptoms suggesting a true hay fever, also some wheezing but no acute paroxysms. Occasionally she used acetylsalicylic acid for its analgesic effect. Since 1925 the dyspnea and wheezing had become more severe, and she was not expected to recover from one or two attacks. Hypodermic medication interrupted the attack. The writer concluded that all of these cases were demonstrations of allergy, due to acetylsalicylic acid and that nostrums containing that compound are not "harmless" from the standpoint of the patient with allergic symptoms.

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WILLIAM WILLIAMS KEEN

A great man, a great citizen, a patriot, a leader among men, and one of the finest characters of American life passed to the beyond when Dr. W. W. Keen, Philadelphia, died in his apartments June 7, in his 96th year. Space does not permit proper eulogy to this great man, Though he retired at 70, more than a quarter of a century ago, he retained to the last a keen and intense interest in all things medical, sociological and to the public good. Perhaps the most remarkable achievement of his career was his operation upon President Grover Cleveland for a malignant condition of the jaw. At the time, had it become known that the life of the President was in peril, the effect upon world trade as well as political situations would have been incalculable, but Dr. Keen evaded all publicity, operated upon a moored yacht in East River, directed his patient to a landing near his home on the Jersey shore, later placed a prosthetic appliance in proper position, and the matter remained a secret, the President never missing anything of a necessarily vital function, so, a public, which might have precipitated all kinds of trouble remained in ignorance of the matter for more than 20 years. It is significant that one news writer, who acquired the facts in some manner by reason of his privileged position, so far forgot his duty, probably for the money involved, to publish, in Belgium, the story of the operation—the matter was officially denied, in the interest of the public, the writer was properly discredited, though he had told the truth; so far as he was concerned it spelled ruin.

The varied activities of Dr. Keen are too numerous to index in the space we have, but it is sufficient to say that he served in the Civil war as a surgeon, 5th Massachusetts, later acting as Acting Assistant Surgeon, U. S. A., and throughout a busy life the best interests of the medical services of the nation was one of his great interests. Patriotism was deeply instilled in the man, and for that reason he always stood very high among men of advanced thought who had the improvement of the medical services of the country at heart. Anatomy, pathology and surgery were his chief concerns as a medical man. The nation loses a great citizen in his passing.

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Editorial Notes—Personal and General

DR. K. D. GOSSOM, Custer, is visiting California and other western points.

DR. JOHN F. PARK, McAlester, has returned from a trip visiting European Clinics.

DR. J. HUTCHINGS WHITE, Muskogee, spent the month of June in Washington, D. C.

THE AMERICAN MEDICAL ASSOCIATION will meet in Milwaukee, June 12-16, 1933.

DR. B. H. WATKINS, Hobart, who has been ill from an infected finger, is reported much improved.

DR. JOSEPH W. KELSO, Oklahoma City, and Mrs. Elsie E. Carter, were married, Wednesday, July 20th.

DR. AND MRS. J. T. ANTONY, Lawton, will spend several weeks in Colorado points during this summer.

DR. C. C. RICHARDS, Marlow, while attempting to get his car out of a mud hole, slipped, breaking his arm.

DR. AND MRS. F. G. DORWART, Muskogee, will spend a month in the hills on the Illinois River during September.

DR. J. S. VITTUM, Muskogee, of the U. S. A. Medical Reserve, will spend two weeks in Ft. Sam Houston in July and August.

COLONEL L. S. WILLOUR, McAlester, of the U. S. A. Medical Reserve, will spend two weeks at Ft. Sam Houston in July and August.

DR. AND MRS. CHAS. A. BRAKE and children, Norman, have returned from a vacation spent at various points in Colorado and New Mexico.

ADAIR COUNTY PHYSICIANS entertained visiting physicians with a fish fry, August 3rd, at Watts, after which papers on medical subjects were read.

DR. R. M. HOWARD, Oklahoma City, was elected President of the American Goiter Association, at the last Annual Session held at Toronto. The convention will be held in Switzerland next year.

KAY COUNTY CHARITY CASES will be done proportionately by local doctors over the county, during the coming fiscal year. It is said that a free clinic which heretofore has handled this work will be abandoned.

IN A RECENT ISSUE OF THE JOURNAL it was noted that Dr. L. J. Mooreman was elected President of the National Tuberculosis Association at the Annual Convention in Colorado Springs, in June. This was an error; he was elected Vice-President.

BLAINE COUNTY MEDICAL SOCIETY held its regular quarterly meeting, June 23, in Watonga. The object of the meeting was to increase interest in attendance and increase the output of papers and case reports and generally improve the society. Applications of Doctors Hill and Dresbach, were voted upon.

THE STATE DEPARTMENT OF HEALTH announces that 81,867 children, under 12 years of age, were given toxoid to prevent diphtheria during the year ending April 1st. The department also announces that quinine is being distributed free in large quantities to school children, as well as others in Haskell County. This is done to prevent malarial fever.

THYPHOID FEVER, according to recent reports shows an increase in the United States over the past; 391 new cases being reported in 45 cities and in rural districts; the previous week there were 215 new cases. This disease has become so rare in the last few years, no doubt due to national conditions plus many million preventive vaccines that the doctor had begun to forget it. Now this new increase has brought about a disposition to again "swat the fly." Of course we should swat the fly and not forget the preventive vaccine which is almost a positive preventive of the disease.

SISTER AMY McPHERSON HUTTON, apparently is not getting a square deal. Every time she is abducted into the Mexican desert or strays too far from Malibou Beach somebody tries to swipe Angeles Temple. Recently upon news that her new husband, David Hutton, had lost a damage suit brought against him by a woman who charged that Dave had "done her wrong." Sister Amy toppled over and, according to the press, is supposed to have had a concussion of the brain, that however, did not prevent her from immediately consulting her attorneys. The concussion? must have been severe.

PUBLIC HEALTH IN MEXICO. According to Stuart Chase, who has recently issued "Mexico, A Study of Two Americas," public health and practice of medicine in Mexico, considering the past history of Mexico, is in a remarkable situation. First, it takes some of the conceit out of us to know that the first newspaper published in the western hemisphere was in Mexico, not in the United States; it is well known that the first Medical Journal El Mercurio was published in the City of Mexico, and not in our great medical centers of today, Boston and Philadelphia. Despite all this Chase says, and refers largely to rural communities, "Scientific medical care is non-existent"; the herb woman and the midwife are people of importance in this country. It was amusing to Chase to find, when the Catholic Church was in its day in Mexico, that a little piece of paper plaster was encouraged to be used by thousands of people by their priests as a substitute for medical care. Naturally the death rate as well as the morbidity rate from such disease as typhoid fever, except in the larger cities, was terrific and unbelievable. The death rate per thousand, particularly among infants is scandalously high. Notwithstanding, all in all, Chase is more than fond of the rural Mexican, that type denominated as of Indian descent.

KAY COUNTY MEDICAL SOCIETY, in order to meet its situation with reference to indigent patients, adopted the following resolutions:

First Resolution, November, 1931.

"WHEREAS, we, the physicians of Kay County, in common with physicians everyhere, recognize the high aims and exacting duties of our profession to alleviate human suffering, without too much regard to the social or financial status of those affected, we recognize further that the present time finds many of our citizens bearing special burdens because of illness, accompanied by reduced salaries or absolute loss of work, resulting in at least temporary financial dependence. We recognize further that the good health and working capacity of all our citizens must be saved and conserved, and pledge ourselves to this task (service). BELIEVING, however, that the feeling of independence and self respect of these temporarily indigent people should be respected and preserved, we the physicians of Kay County, object to any system of medical service which tends to force (farm them out) any of them to a single physician not of their own choice, or which compels any physician to undertake an indefinite amount of labor for a contract price.

RESOLVED, therefore, that we respectfully urge upon our County Commissioners to adopt some means for the care of our indigent poor which will not violate these principles, and we

further bind ourselves individually and collectively to observe these same principles in our work for the county poor.

Second Resolution, July, 1932.

RESOLVED, that the Doctors of Kay County each pledging himself to give of his service as called upon in the discharge of our duty to the indigent of the county, do favor and unanimously agree that we revert to the system previously used in this county, that is, those known indigent are referred by the health supervisor, authorized and established by the commissioners, refer this indigent patient to the doctor of the patient's choice."

DOCTOR OLIVER RANCE JETER

Dr. O. R. Jeter, prominent physician of Mangum, died July 2nd, of intra-cranial hemorrage.

Dr. Jeter was born at Troy, Alabama, June 17, 1882. At the age of four years he moved with his parents to Winnsboro, Texas, were he resided until he came to Greer County 25 years ago. Upon his father's death, when he (Dr. Jeter) was fiften years, he was obliged to support the family and educate himself. He worked his way through the school of medicine of Baylor University, graduating in 1907.

After his graduation from Baylor University Dr. Jeter came to Greer county, locating at Reed, and later moving to Mangum in 1927.

Dr. Jeter was an expert anesthetist and for many years was on the staff of the Border-McGregor Hospital.

Funeral services consisted of a ritualistic ceremony of the Knights of the Rose Croix, performed by the Oklahoma Consistory, which was followed by a funeral sermon by the pastor of the First Baptist Church, of which Dr Jeter was a member.

His immediate survivors are his widow, Mrs. Kate Jeter and two children.

HARD TIMES A MENACE TO GROWING CHILDREN

It is now more important than ever for children to drink lots of milk, according to health authorities. Hard times are making disastrous inroads on the family food-budget. Enforced economy in the expenditure for food is fast becoming a menace to the health and development of growing children. At a time like this milk is very important because it makes up for other food deficiencies. Cocomalt mixed with milk provides a delicious, chocolate flavor food drink—high in nutritive value, low in cost. It points the way to sensible economy. For Cocomalt adds 45% more protein, 48% more mineral salts and 184% more carbohydrate— increasing the caloric value of a glass of milk more than 70%. It contains not less than 30 Steenbock (300 ADMA) units of Vitamin D per ounce. Cocomalt is accepted by the American Medical Association Committee on Foods. Sample can of Cocomalt sent to physicians on request by R. B. Davis Co., Hoboken, N. J.

HYPERTHYROIDISM ASSOCIATED WITH PARKINSONIAN SYNDROME

I. S. Wechsler and Nathan Savitsky, New York (Journal A. M. A., Oct. 31, 1931), note that the association of exophthalmic goiter with paralysis agitans is comparatively rare. Most of the cases reported in the literature show that the association is an accidental one. In the majority of instances the hyperthyroidism preceded the onset of the parkinsonian syndrome. In recent years, attention has been called to the presence of signs and symptoms referable to the vegetative system in acute and in chronic encephalitis, which have a predilection for the basal ganglion-midbrain regions. But even before the involvement of the hypothalamic vegetative centers was recognized as the cause of metabolic and other disturbances, the sympathetic system was believed to be affected in exophthalmic goiter and to bear some relation to it. More recently, the suprarenals, the medulla of which is of the chromaffin sympathetic system, have been shown to stand in definite causal relation to hyperthyroidism. From time to time, suggestions have been made that physiologic or pathologic disturbances in the vegetative centers of the interbrain may have something to do with the production of many syndromes previously regarded as independent disease entities. The question, too, has been raised whether in a syndrome such as hepatolenticular degeneration, the disease of the liver causes the changes in the brain or, conversely, the involvement of the striatum leads to secondary disturbances in the liver. In encephalitis it has long been known that what may be regarded as dysthyroid symptoms were frequently a part of the clinical picture, even though there was no true exophthalmic goiter. The speculation is also justified as to whether the tremor of hyperthyroidism is not in effect the result of secondary changes in the striatum. In view of all this, the question now arises whether exophthalmic goiter may not in some way be the result of some altered physiologic state or pathologic change of the hypothalamic vegetative centers. The proximity of these structures to the regions affected in paralysis agitans and the occurrence of hyperthyroidism with parkinsonism in two cases reported by the authors in which the one syndrome preceded the other may possibly furnish clinical confirmation of theoretical views. In any event the cases, aside from their speculative interest, are worthy of record because of their clinical rarity. Of clinical interest in both the cases was the difficulty in dissociating the hyperthyroid from the parkinsonian tremor. The former is much finer and more rapid, but it overlaid the coarser and slower oscillations of basal ganglion origin. The improvement following thyroidectomy subtracted, as it were, the overtone of tremor and improved the underlying basal ganglion syndrome to some extent. But it may well be that the thyroidal tremor is in reality of basal ganglion origin and caused by toxic changes in those structures. It is interesting, too, that the surgeons hesitated to operate, and it was only after urging by the neurologist and assurance that the paralysis agitans in itself was no contraindication that operation was performed.

ABSTRACTS « REVIEWS « COMMENTS AND CORRESPONDENCE

UROLOGY and SYPHILOLOGY

Edited by Dr. S. D. Neely, M.D.
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The Prolonged use of Salyrgan as a diuretic. Report of two hundred and seventy injections in five years in one case. Joseph R. Wiseman, M.D., Syracuse, N. Y., Journ. A. M. A., July 9th, 1932, Page 114.

The author reports one case of decompensated hypertensive cardio-vascular disease with marked edema which was given two hundred and seventy injections of salyrgan and novasurol over a period of five years. Excellent diuretic results were received, throughout, and this prolonged treatment appeared to be harmless on the kidneys and other organs. Ammonium chloride, 10 gms. per 24 hours preceded the intramuscular or intravenous administration of this drug, novasurol during the period of this treatment was changed to salyrgan. The spilling of this drug in the tissues results in varying degrees of irritation, and it is painful given intramuscularly. Given intravenously it creates some disturbances in obliterating the veins. This drug contains 33% mercury.

Gonococcal Arthritis. David Lees, F.R.C.P., Edinburg, Scotland, British Journal of Veneral Diseases. April, 1932.

The author after quoting various statistics on the incidence ranging from .05 to 3.22 in his series, or 388 cases of arthritis in 13,000 cases of gonorrhea. It is 4 to 5 times more frequent in males than females. It may complicate gonorrhea at any age but most frequently seen between 20 and 30 years. It occurred as complication of ophthalmia in two cases. In 150 cases of vulvo-vaginitis in children not one case was seen. Among predisposing causes he mentions lack of treatment in the early stages of gonorrhea. Arthritis is rare in anterior urethritis in the male and in urethritis in the female, if these are treated early and intelligently the infection can be kept back from the posterior urethra and the cervix. Too heavy or active exercise during the acute stages. In all gonorrheal cases alcohol intake predisposes to complications metastatic in type.

Arthritis is prone to recur and one attack predisposes to another. In every case there is a primary focus of infection in the body. The infection is metastatic and the organism is carried to the joint by the blood stream. The prostate gland and seminal vesicle are the most common focal points in the male. In this series the author found the posterior urethra involved in 100% of cases, and prostatitis or vesiculitis in 90%. In adult female patients the urethra and cervix are involved in 80% of cases, Bartholin's gland in 40%. Arthritis may set in from 5 days to many years after the initial infection. The author states that 5 days is the earliest case that he has seen. The arthritis is either mon or poly articular, 15% mon, and 85% polyarticular, large joints are involved more frequently than small ones, order of frequency in his series was knee 64.2%, ankle 36.8%, metatarso-phalangeal 34.7%, shoulder 23.1%, wrist 41.1, metacarpo-phalangeal 13.6%, elbow 4.2%.

The clinical acute cases can be divided into four types. (1) Arthralgia with no gross physical signs of disease. (2) Acute infection of the joint confined to synovial membrane, becomes hyperaemic, considerable fluid in joint, fluctuation can be detected. (3) Acute infections in which in addition to the synovial membrane the cartilaginous surfaces eroded. (4) Acute infection involving the synovial membrane and the articular surfaces with marked hyperaemia of all the vascular structures.

Subacute and chronic cases he subdivides into two types (1) A synovial type involving especially the knee joint. (2) A mixed type involving the synovial membrane and the articular surfaces.

The symptomatology varies with the virulence of the infecting agent, and resistance of the host. Pain, swelling, redness and immobility of joint. Temperature, when suppuration occurs the temperature goes higher, pain more severe, sweating and an ill looking patient. Suppuration he states is rare in small joints. In subacute and chronic cases the swelling is in the form of a hydrops, motion is not so limited here, pain less severe, but this swelling may lead to laxity of the ligaments. The knee joint is most often involved in hydrops. In many of the untreated cases there is often marked limitation of motion due to adhesions set up by serofibrinous exudate, some even simulating ankylosis.

Diagnosis is easy in the acute cases, the clinician must make tactful inquiries regarding urethral discharge. Examination per rectum may reveal some enlargement of the prostate and seminal vesicles. More difficulty is seen in the acute cases following an acute exacerbation of a chronic gonorrhea, or after passage of a sound as for stricture. Subacute and chronic cases of gonococcal arthritis are difficult to diagnose. Any subacute joint condition which is persistent always should prompt us to exclude gonococcal infection, this includes examination for urethral discharge, urinalysis, bacteriological test of secretions, centrifuged deposit of urine, rectal examination of prostate and vesicles with examination of their secretions. Injection of 200 to 400 million dead gonococci to stir up any latent infection, and repetition of the above tests every 24 to 36 hours. The complement fixation test the author states gives a positive reaction in 75% of acute cases, and in subacute and chronic 80%. A negative result does not exclude this from diagnosis.

Treatment he divides into general, to the original focus of infection, to the infected joint and thru the blood stream. He mentions many different methods of local treatment to the dif-

ferent foci of infection, and operative methods as vasostomy, vasotomy and vasectomy with injection of antiseptic materials into the vesicles. That directed to the joint first are palliative for pain. Immobilization and rest, application of sedatives to the joints. Diathermy to the joint, he states, is not a cure, but applied to the joint and to the focus is helpful. Operative methods are mentioned for the joint. Intravenous methods have been tried, and he states that mercurochrome intravenously has been found by himself to be too toxic.

Carcinoma of the Prostate: A Clincial and Pathological Study. J. A. Colston and L. G. Lewis, Baltimore, M'd. Southern Med. Jour., July, 1932.

The author cites 3751 operations on the prostate gland, in 3176 of these pathological study has been made, and he states that there is no evidence in this series that carcinoma develops from benign prostatic hypertrophy. He found carcinoma associated with adenoma (benign) in 57% of these cases. He states that his interpretation here is that carcinoma and adenoma occur simultaneously and independently in the prostate. He mentions the classical progression of carcinoma of the prostate, extension upwards, infiltration of the gland, the seminal vesicles, and slowly the tissues lying beneath the base of the bladder is involved. This growth rarely extends beyond the apex of the prostate, and very rarely penetrates Denonvillier's fascia and into the rectal wall, this because of the lack of lymphatics in this fascial membrane. The rapidity of the growth depends on the type of tumor, the more cellular the tumor the more rapid the extension. He states that suprapubic cystotomy as a routine procedure should be condemned, and to reserve this operation for emergencies only. He classifies from a clinical standpoint cases of malignant disease into (1) Those suitable for radical operation. (2) Cases without urinary obstruction, but too far advanced for radical operation. (3) Cases with varying degrees of urinary obstruction too far advanced for radical operation. A small percent of these cases too extensive for radical operation may be relieved with X-ray and radium therapy. Obstruction can be relieved temporarily by Young's prostatic punch, transurethral electro-instrumentation of various types. He states that if the profession were more alert and suspected all cases with areas of induration in the prostate many more early diagnoses could be made.

In a middleaged female with symotoms of dysuria, frequency, never forget the urethra.

An examination of a male is never completed until an educated finger has been inserted in the rectum and the prostate and seminal vesicles are palpated, and if any suspicion attached in this region massage instituted.

TUBERCULOSIS

Edited By

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Summary of a Study of the Types of Tubercle Bacilli Isolated from Human Lesions. R. M. Price. The American Review of Tuberculosis, March, 1932.

This study began in March, 1926, and being continued at the present time was undertaken with a view of ascertaining the incidence of the bovine type of tubercle bacillus in human infections and the proportion of bovine to human infection in man. In the beginning of the work an effort was made to limit the study to non-pulmonary forms of tuberculosis; later, however, a number of pulmonary cases were examined. Since it is obvious that many apparently non-pulmonary types are really cases of metastic focal tuberculosis secondary to a minor pulmonary lesion it was impossible, for the purposes of this study, to depend upon the clinical differentiation of pulmonary and non-pulmonary tuberculosis. The material studied in a majority of the cases investigated, was obtained during life from the wards or the operating room. Detailed clinical histories were taken in all juvenile cases in an effort to trace the source of infection, whether human or bovine.

Of 220 patients in the juvenile group suffering from some form of tuberculosis, 190 proved infected with the human type and 30 with the bovine type of tubercle bacillus. In the majority of instances in which the human type of bacillus was isolated there was a known history of close contact, usually with a relative in the home, with open tuberculosis. Physical examination or X-ray or both showed evidence of tracheobronchial or pulmonary disease, the evidence pointing to the respiratory route of infection. In 30 cases of this series, the youngest an infant of 5 months and the oldest a girl of 12 years, the infection was caused by the bovine type of bacillus. Without exception, the children having this type of infection have come from districts in the Province of Ontario where pasteurization of milk was not carried out, history invariably revealing the fact that the child had been fed on raw milk. It was possible on a number of occasions to demonstrate virulent bacilli in the milk consumed by the child and in the cattle responsible thus bringing forward indubitable evidence of the source of the childhood infection.

It would appear from this study that: (1) Bovine tuberculosis is an almost negligible factor in adult human infection. (2) It is a factor of considerable importance in childhood infection, however, since we find that 13.6 percent of non-pulmonary tuberculosis, leading to disablement, operation and necessitating long expensive treatment, with doubtful results, is caused by the bovine type of bacillus. (3) the disease is milk-borne. (4) Bovine tuberculosis is preventable and can be controlled by effective pasteurization of milk. This is forcibly demonstrated by the fact that in the City of Toronto, where pasteurization of milk is compulsory and has been rigidly enforced since 1915, not a single case of bovine infection has been found in the group of children brought up on the pasteurized milk of the district since that time.

The Use of the Artificial-Pneumothorax Apparatus During Thoracoplasty. Cameron Haight. The American Review of Tuberculosis, March, 1932.

The routine use of pneumothorax apparatus during thoracoplasty in cases of closed pneumothorax is suggested. By regulation of the intrapleural pressure during the operation, it is possible to obviate a shift of the mediastinum and consequent respiratory and circulatory embarrassment. Furthermore, on completion of the operation, an optimum collapse of the chest-wall may be at-

tained by decreasing the pneumothorax as desired or by abolishing it entirely.

A case of tuberculous empyema with pneumothorax is reported, in which an increase in the intra pleural pressure during the second-stage thoracoplasty resulted in marked respiratory and circulatory embarrassment. Prompt lowering of the intrapleural pressure by withdrawal of air from the pleural cavity relieved the condition which might otherwise have proved fatal.

The Use of Metaphen-in-Oil in Pulmonary Cavitation. M. Jacobs. The American Review of Tuberculosis, March, 1932.

Collapse therapy and thoracoplasty constitute the only rational treatment in the management of pulmonary cavitation. In the far-advanced and inoperable cases, external drainage should be encouraged. This can be accomplished by intrapulmonary medication with different drugs dissolved in oil, which should be followed by postural drainage. With this method, the expectation is mechanically facilitated and reduced, the cough is diminished and the temperature, pulse and respiration are greatly improved. The author reports five cases bearing out his experience that metaphen-in-oil, 1:5000 solution, has proved to be the best available agent. It has antiseptic properties and is non-toxic and non-irritating. He describes his cases and their treatment in detail.

Tuberculous Infection in Mental Defectives. A. N. Bronfenbrenner. The American Review of Tuberculosis, March, 1932.

The high mortality of pulmonary tuberculosis in state institutions for the feeble minded leads one to expect a high prevalence of tuberculous infection among mental defectives. The sanitary standards of these institutions and the hygienic routine instilled into the inmates, however, do not corrborate such an expectation. These observations led to a tuberculin test of the entire population of Letchworth Village (State School for the Feebleminded, Thiells, New York) in an effort to determine some actual facts in regard to the prevalence of tuberculous infection among the feeble minded.

There were 946 (40.5 percent) reactors among the 2334 persons tested. The proportion of reactors among the children attending the grade school of the institution, 34.7 percent, compared with what has been found in public school children in various communities indicated that the prevalence of tuberculous infection in the institution tends to be lower than in the city communities from which the institution draws its patients. The advantages of institutional surroundings over city environment were illustrated by the observation that the proportion of reactors among recently admitted school-children is higher than among the pupils who have resided in the institution for some length of time. Analysis of the results of the tuberculin testing showed that the prevalence of infection is kept under good control in all parts of the institution except the infirmaries. The proportion of reactors was found highest, 50 to 60 percent (irrespective of the ages of the individuals), among the infirm patients. This appears to be due to the combined effect of their mental and physical deficiencies and might contribute greatly to the high mortality rate among the feeble minded. Another observation which apparently has a bearing on this is that the proportion of reactors tends to be higher in the lower grades of the feeble minded. This was true in the entire population of the institution as well as in groups of defectives apart from the infirm patients, so that it appears that mental defect in itself is a factor favoring the spread of tuberculous infection.

Abnormal Mental States in Tuberculosis. Alexius M. Forster and Charles E. Shepard. The American Review of Tuberculosis, March, 1932.

A study was made of the abnoral mental states found in 100 unselected cases of pulmonary tuberculosis in Cragnor Sanatorium in an attempt to learn whether such abnormal mental states are specific to the disease or are dependent upon the personality makeup of the individual. Personality makeup was determined by a complete physical and psychological life history of each individual. Tuberculosis has been considered as an emotional crisis in the life of the individual toward which he may react either normally or abnormally, depending upon his personality makeup before the onset of the disease. Sixty-one per cent of the group studied were considered to show a normal behavior under treatment, or they showed a simple emotional maladjustment which was rectified during the period of observation. Of the remaining 31 patients, 7 showed a persistent simple maladjustment, 20 were diagnosed as definitely neurotic and 4 were diagnosed as psychotic. Of the neurotic group, 9 cases of fatigue neurosis (neurasthenia), 10 cases of anxiety neurosis, and 1 case of conversion hysteria were seen. Fatigue neurosis was found more frequently in women than in men and more frequently in the asthenic than in the athletic individual. Anxiety neurosis was more common in men than in women and was found quite frequently in Jewish patients. No abnormal mental state specific to tuberculosis was discovered. No correlation was found between abnormal mental states and the extent of disease, severity of toxaemia, conditions of age, sex or body type. A definite correlation was found to exist between these abnormal mental states and the personality makeup of the individual, thus the emotional reaction to tuberculosis may be roughly predicted from a study of the personality make up of the affected individual. While abnormal mental states are observed commonly in tuberculosis they are probably no more common than in other conditions which produce similar emotional crises and in which the restrictions imposed by that crisis call for so much emotional adjustment. It is to be concluded that an individual will react to tuberculosis either normally or abnormally according to his emotional stability or instability as determined by his personality makeup before the onset of the disease. Normal adjustment may be expected in the patient with an emotionally stable personality while abnormal mental states must be expected in those patients who are already emotionally unstable before the onset of tuberculosis.

NEUROLOGY AND ENDOCRINOLOGY

Abstracts, Reviews and Comments Edited by
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The Effect of Liver Therapy on the Neurologic Manifestations of Pernicious Anemia. Baker, Benjamin M., Jr., Bordley, James III, and Longcope, Warfield, T. Am. J. Med. Sciences, 184:1, July, 1932.

Many conflicting reports have been presented regarding the value of liver therapy upon the nervous symptoms of pernicious anemia. In this article the authors have extensively reviewed the literature and present their results in the treatment of forty-four cases of pernicious anemia, thirty-five of which showed definite signs and symptoms of subacute combined degeneration. They illustrate the course of the disease under treatment with five case reports.

They call attention to the certain similarities in the effects produced upon the symptoms referable to changes in the nervous system by liver therapy. The signs and symptoms most noticeably benefited are those having to do with a disturbance of sensation or of motor paresis. Muscular weakness, numbness and tingling, even profound alterations of cutaneous or osseous sensibility, ataxia, girdle sensations and sphincter disturbances may improve remarkably or disappear entirely. Whereas, although the Babinski sign may disappear, the exaggerated reflexes and spasticity are less likely to diminish, and though the spastic paresis may be greatly improved in some instances this is rare. They observed that large quantities of liver are required to bring about the maximum therapeutic effect, and warn us that a rise in the erythrocytes is not commensurate with improvement in nervous symptoms. Although the red blood count may return to normal, the nervous symptoms may persist or actually progress. They particularly stress the time factor, and state that during the entire latent period liver should be given in large amounts and with total disregard to a high red blood cell count. The presence of comparatively mild infections in pernicious anemic patients greatly retards the response to liver therapy and may prohibit it entirely.

They seem to agree with Henneberg that the characteristic lesion in the spinal cord in pernicious anemia is not a sclerosis but a focal degeneration of the myelin sheaths, which, as the process increases, spreads upward in the posterior column and down in the pyramidal tracts. The lesion is different from that in tabes, in that the posterior roots are not involved. There is considerable evidence that the lesions are not confined to the spinal cord, but that all parts of the nervous system may be affected, including the peripheral nerves, cord and brain. This clarifies many of the symptoms and signs, such as peripheral neuritis, glossitis and papillary atrophy, so commonly found. Psychoses, usually manifested by depression, and ideas of persecution are not uncommon, and these in some instances may be directly connected with anatomic changes in the brain.

Many authors are in accord with the view that the origin of the changes in the nervous system in pernicious anemia are dependent, as they are in beriberi and sprue, upon a vitamin deficiency. It is known that a deficiency of vitamin B is the immediate cause of beriberi and probably of pellagra, and that the lack of the anti-neuritic principle of vitamin B in the diet will result in extensive multiple degeneration of the peripheral nerves, spinal cord and brain. It may be that in some way this deficiency might be accountable for the alterations in the nervous system in pernicious anemia.

They report improvement in the nervous signs and symptoms in 58.93 per cent in eight patients with advanced subacute combined degeneration who were treated for more than ten months, and in 55.17 per cent of the signs and symptoms in cases treated for more than six months. The symptoms and signs that improved most noticeably were those referable to disturbances of cutaneous and muscular sensibility, and to flaccid pareses.

They state in conclusion that, even though there still remains a group of cases in which the extent and situation of the degenerative lesions in the spinal cord excludes the possibility of repair through therapeutic procedures, it seems unreasonable on this account to neglect those cases which may be vastly improved by intensive liver therapy.

Neuro-Anemic Syndrome. Baker, Lewellys F., So. Med. Jour. 25:687, July, 1932.

Barker reports a case of the Addison-Biermer type of anemia with neurological symptoms treated by parenteral administration of liver extract, and discusses some of the recent improvements in the treatment of this type of anemia.

He cites Gansslen of Tubingen, who has used intramuscular injections of a special extract of liver, and the results obtained in Johns Hopkins Hospital with a similar extract. Gansslen, on giving only 2 cm. daily (equal to only 5 grams of liver) by his method was able to stimulate the development of reticulocytosis and the restoration of the blood as rapidly as when given fifty times the quantity by the oral route. He also quotes Gansslen in that cases of pernicious anemia that were recalcitrant to oral administration of liver and liver extract have responded quite well to treatment by his new extract administered by the parenternal route, and that these intramuscular injections have been particularly efficacious in causing great improvement in the neurological signs and symptoms.

He refers to Victor Schilling, of Berlin, who states that the intramuscular injection of this substance is followed by an increase of strength, an improvement of the general appearance, a heightening of the capacity for work and an elevation of the general mood. These changes were especially noticable in those patients who continued to have residual symptoms, such as paresthesias, emotional depression, anorexia, emaciation and pallor, despite a daily intake of 250 grams of natural liver.

He mentions the work of Isaacs, Sturgis and their associates at the University of Michigan, who have produced a liver extract said to be thirty times as efficacious as other extracts and suitable for intravenous administration. From four to six injections of this new extract bring the blood in pernicious anemia back to normal and

thereafter injections once a month continue to maintain normal counts.

In closing he warns, pending better knowledge, against intravenous injections of liver extract, except in cases that are refractive to large doses of liver and liver extract given by mouth.

The Problem of Hysteria. Prof A. Hoche, Psych. Univ. Clinic, Freiburg. (Deutsche Medizinische Wochenschrift, No. 1, 1932). Abst. Ars. Medici, 10:254, June, 1932.

The speaker in his lecture opposed the view of the majority of modern physicians that hysteria has been "unmasked" as a purely psychic process produced by some kind of speculation with regard to some "object of desire." It is true that today we see far fewer cases of hysteria outside our activities as expert opinion; this fact may however, be connected with the circumstance that nowadays there are not many people who are in some kind of insurance. Most of the symptoms of hysteria, which often point directly to organic fundamental causes, cannot be explained by "motive" alone. The tendency to muscular tiredness, to tachycardia, extrasystoles, to seasickness, formication of the limbs, the sensitiveness of the skin to insolation or bites of insects, the intolerance of alcohol or tobacco, the idiosyncrasy to a number of medicaments, nervous dyspepsia, etc.—all these symptoms are indicative of a different make-up not of the mind but of the nervous system. It is even more difficult to explain hysterical analgesia and paralysis by phychic changes. The "motive" therapy simply pronounces the patient to be analgetic because he wants to appear ill. Why then cannot a person suffering from trigeminal neuralgia abolish his maddening pain by a lively determination to do so? Why did not the victims of medieval tortures tread this path to analgesia that is said to be so easy? We must confess that we cannot explain why an irritation that excites pain of whatever degree fails in some persons at certain times to penetrate to their consciousness although their conduction is unimpaired. With hysterical paralysis, the inference that the patient does not want to move seems obvious; but even there we are groping in the dark. The motor cerebral cortex gives the impulse for the action of the muscles of the body, but we do not know along what path the will to move reaches the motor cerebralcortex. Patients suffering from katatonia report, in times of remission, that they had not been able to carry out movements without being prevented by definite intentions, feelings or ideas.

From the practical point of view, the matter lies as follows: there are individuals who at certain times and in certain circumstances show genuine hysterical symptoms the nature of which we cannot explain. The motive theory throws as little light on the subject as any other. We must be satisfied simply to state and recognize the fact. Persons in whom such symptoms are observed do not differ from others in their outward appearance, but there must, nevertheless, be active in their central mechanism some unknown peculiarity of which it is a question whether it is innate or whether it is acquired under the influence of special factors. The speaker described this peculiarity as "hysterical capacity," a term which is now generally accepted. This hysterical capaity may apparently be present during a person's whole life without ever becoming manifest; among the many factors which arouse it belong injuries due to accident, but it is certain that not all the functional nervous consequences or accidents are of a hysterical nature. Neither will all of the persons who are capable of hysteria react to an accident with hysterical symptoms; something must also occur in addition and this is the decisive point; what is characteristic of the subject of hysteria is that he turns his hysterical capacity to account. In cases of this kind, the idea of a "motive," which is of course based on vast practical experience is, to a certain extent justified. A good many victims of accidents who possess a congenital or acquired hysterical capacity exploit this capacity more or . capacity not only serves the desire for compensation; it may arise from the wish to satisfy an injured sense of right; it may have its source in the dread of disease (hypochondriacal hysteria) etc. So far the nature of hysteria remains, as it always has been, obscure.

Amyotrophic Lateral Sclerosis (A Clinical and Pathologic Contribution). P. Ottonello Rassegna di studi psichiat. 18:221 (May, 1929). Abst. Arch. Neuro. and Psychiat. 27:1482, June, 1932.

The author reports in detail eleven cases of amyotrophic lateral sclerosis from the clinical standpoint and five from both the clinical and the pathologic standpoints. He pays particular attention to the etiology and pathogenesis of the clinical manifestations. He is opposed to any narrow limitations or distinction of amyotrophic lateral sclerosis from other bulbospinal spastic and trophic clinical syndromes, as transitory stages are frequently found that point to a strict relationship between lesions of the cells of the anterior horn and of the medullary pathways. Among the various conclusions that the author reaches, the following are worthy of consideration: (1) The lesion of the pyramidal tract as well as of the cells of the anterior horn has the definite characters of a primary process. (2) The perivascular infiltrations that are occasionally found are so slight as to be considered secondary to the process of disintegration.

A study of the lesions that are found in the cells of the anterior horn and in the medullary pathway leads to the consideration that amyotrophic lateral sclerosis is a pathologic condition, the pathologic substratum of which consists fundamentally of the association of lesions involving the two neurons of voluntary motility. Such facts, however, do not authorize a separation from the pathologic standpoint between amyotrophic lateral sclerosis and other pathologic conditions in which the lesions are predominantly or exclusively circumscribed in one of the two systems, not only because of the close analogies of the elementary lesions in these various diseases, but because of the frequency with which one observes histologic pictures of transition between the various pathologic conditions mentioned. The author believes in the systemic nature of amyotrophic lateral sclerosis, and considers the lesion of the central and peripheral neurons as being independent of each other; therefore, he does not subscribe to the opinion of Bertrand and Bogart of an early involvement of the synopses between the two neurons.

On the question of pathogenesis, the author develops extensively his own conception of the vulnerability of the various structures of the spinal cord on the basis of a difference in chemical structure. The predisposing and determining

factors of the disease are also studied from a biochemical standpoint. From the etiologic standpoint, the author emphasizes the importance of toxic and infectious diseases, among which syphilis seems to play an important role.

SURGERY OF SUPPURATION IN FASCIAL SPACES OF THIGH

J. E. Milgram, Iowa City (Journal A. M. A., Jan. 9, 1932), calls attention to the fact that if one reads the textbooks of today and studies, for example, serial cross-sections of the thigh, one obtains the impression that the thigh is a compact structure of muscles and bones, encased in fascia, subcutaneous tissue and skin. Between the muscles run irregular septums or prolongations of fascia. This orthodox description is not correct. The thigh contains large and very important fascial spaces extending its full length traversed only by fine areolar bridges. A revision of one's understanding and treatment of thigh infections is necessary in the light of this concept. Just as the spatial anatomy of the hand is a comparatively new surgical acquisition, so is a painstaking study of the fascial spaces of the lower extremity a recent accomplishment. During the past five years the author has examined the fascial spaces of the lower extremity in approximately 200 cadavers. During this period he has tried to apply his anatomic concepts to a clearer understanding of the reasons for and paths of suppurative extension in the lower extremity. He lists the salient and anatomic features of the situation thus: 1. There are two large compartments in the thigh—an anterior and a posterior. They communicate over the greater trochanter under the vaginal fascia. 2. The important structures immediately beneath the floor of the anterior compartment are the anterior femoral nerve and the great artery and vein. 3. The structure of most interest in the floor of the posterior compartment is the great sciatic nerve. 4. Several bursae have easy access to the compartment, in particular the large, deep trochanteric bursa, which lies between the vaginal fascia above and the greater trochanter below. 5. The popliteal space belongs in a special sense to the leg and not to the thigh. These large compartments are obviously "dead spaces" into which adjacent pathologic processes accompanied by suppuration can discharge purulent material. Once in these spaces, such pus may travel a very long way into communicating spaces. Efficient treatment requires: (1) Accurate preoperative localization of the primary focus, if possible. The common sources of error lie in the failure to think of pathologic changes in the bursa or to seek silent lesions in the ilium, sacrum, sacroiliac joint, spine and retroperitoneal structures. In infections of the bursa and the posterior compartment, hip joint disease may be simulated. However, opening of the joint may result disastrously, as the joint also thereupon becomes involved. (2) Efficient drainage of the primary focus—bone, bursa, or gland, wherever possible. Since compartments are unavoidably traversed, incisions should be left wide open and should be as direct as possible. Drainage through split muscle incisions is an undesirable procedure.. (3) Efficient drainage of compartments where involved. (4) Rest. For the past five years, the author has applied the principles and details of the Orr method to the treatment of these soft tissue infections. Petrolatum packs, casts without windows, change being made at intervals of from six to eight weeks constitute the usual regimen. Secretions are quite profuse from large mesothelial surfaces, necessitating careful protection of the skin with petrolatum, and occasionally weekly changes of the outside (only) layers of the dressing. The results have been pleasing.

THE CHANGING DIET OF AMERICAN PEOPLE

In an examination of a few characteristic menus of the past, Lafayette B. Mendel, New Haven, Conn. (Journal A. M. A., July 9, 1932), was impressed by the great abundance of flesh foods in the dietary. This is true regardless of the time of day when the meals were served. The supply of muscle meats was evidently more readily maintained throughout most seasons of the year than was that of fresh fruits and vegetables. With the passing of the years there has been a gradual displacement of meats from their former dominance in the regimen. The modern statistics of the food industries indicate an increased consumption of dairy products, vegetables and sugar. The story of sugar is particularly interesting. During the early part of the last century, sugar was used primarily as a condiment. The consumption in 1823, for example, has been estimated as enough to give each person 8.8 pounds a year This represents about 44 calories a day. Last year, somewhat more than a century later, the annual per capita consumption of sugar amounted to 108 pounds, or more than 500 calories a day. This means that sugar has become an important food, representing, on the average, nearly one sixth of our energy intake. Incidentally, this has been accomplished with a tremendous reduction in the cost of the product; 1,000 calories are being sold at a retail of less than 3 cents. Obviously, this change in food habits in the case of sugar has resulted in the displacement of other foods from the national diet. The tendency toward the displacement of meat dishes, with their higher protein content, is indicated in the recent experience of American restaurants that have adopted the new fixed-price plan with the slogan of "all-you-can-eat." There are more objective indications of changes in food preferences of Americans in the direction of lessened protein intake, such as a decrease in meat consumption would bring about. In the course of a long experience as a teacher of metabolism the author has gathered the reports of hundreds of analyses of twenty-four hour urines of young men and women. In health the nitrogen content of the kidney output furnishes a reliable index of the nitrogenous (or protein) intake. During the nineties of the last century the estimated protein intake, after due allowance for fecal losses of nitrogen, generally approximated an average of at least 100 Gm. (16 Gm. N times 6.25) a day. In the course of the years, these annually secured estimates are showing lower averages. It is possible today to secure fresh meats, fresh eggs and fresh milk in every urban center without interruption; citrus fruits and some sorts of fresh vegetables are available throughout the entire year, even in the smallest hamlet. The opportunity of selection has thus become greatly enhanced. To these important changing factors must be added the results of research in the physiology of nutrition and the extension of popular education regarding food and diet.

REPORT OF EXAMINATION FOR LICENSES TO PRACTICE MEDICINE.

Examination held at State Capitol, Oklahoma City, June 8th and 9th, 1932. The following applicants passed:

Name	Year of Birth	Place of Birth	School of Graduation	Year of Graduation	Home Address or Previous Location
Lattimore, F. Cornwell	1908	Shelby, N. C.	Univ. of Okla.	1932	Okla. City.
Newlin, William Henry	1904	Oney, Okla.	Univ. of Okla.	1932	Maramac, Okla.
Daily, Raymond E.	1903	Georgetown, Ky.	Univ. of Okla.	1932	Okla. City.
Gullatt, Ennis M.	1906	Hanna, Okla.	Univ. of Okla.	1932	Okla. City.
Grosshart, Paul Lawrence	1902	Missouri	Univ. of Tenn.	1931	Tulsa, Okla.
Jones, William Ansel	1903	Kirksville, Ky.	College of Med. Evangelist, Los Angeles	1932	Tulsa, Okla.
Ware, Stephen Charles	1906	Iowa City	Univ. of Iowa	1930	Okla. City.
Barry, George Newton	1900	Missouri	Washington Univ.	1930	Picher, Okla.
Boon, Clifton Udonna	1910	Amarillo, Tex.	Univ. of Okla.	1932	Chickasha, Okla.
Smith, Richerd W. D.	1904	Lorimor, Iowa	Univ. of Okla.	1932	Okla. City.
Hubbard, Ralph Waldo	1908	St. Joseph, Mo.	Univ. of Okla.	1932	Okla. City.
Ragan, Tillman A.	1904	Vichy, Mo.	Univ. of Okla.	1932	Okla. City.
Smith, Addison B.	——	Butler, Texas	Univ. of Okla.	1932	Okla. City.
Allen, George Thomas	1908	Eddy, Texas	Univ. of Okla.	1932	Okla. City.
Brown, Isidore Ira	1907	Phil. Pa.	Univ. of Okla.	1932	Okla. City.
Cordonnier, Byron J.	1906	Avilla, Mo.	Univ. of Okla.	1932	Bethany, Okla.
Batheld, Floyd T.	1900	Bennett, Iowa.	Northwestern	1932	McAlester, Okla.
Cox, Arlo Kenneth	1906	Lenora, Okla.	Univ. of Okla.	1932	Taloga, Okla.
Gibbs, Allen Gilbert	——	Wilkinson, Miss.	Univ. of Okla.	1932	Okla. City.
Felts, George Randle	1907	Elk City, Okla.	Univ. of Okla.	1932	Okla. City.
Leonard, Charles Edwards	1907	St. Louis, Mo.	Univ. of Okla.	1932	Okla. City.
McCollum, Estel B.	1903	Stoatesburry, Mo.	Univ. of Okla.	1932	Waynoka, Okla.
Smith, Raymond Orval	1903	Owasso, Okla.	Univ. of Okla.	1932	Okla. City.
Rieger, Joseph Anton	1894	Lexington, Okla.	Univ. of Okla.	1932	Norman, Okla.
Connell, Matt A.	1906	St. Louis, Mo.	Univ. of Okla.	1932	Picher, Okla.
Carter, Claud E.	1902	Francis, Okla.	Univ. of Okla.	1932	Ada, Okla.
Henry, Millard LaFayette	1908	Little Rock, Ark.	Univ. of Ark.	1932	Wilburton, Okla.
Roth, Herman W.	——	Iowa	Univ. of Okla.	1932	Tyrone, Okla.
Wilkerson, John Milton	1906	Spencer, Okla.	Univ. of Okla.	1932	Okla. City.
Marx, Ralph Leon	1908	Pawnee, Okla.	Univ. of Okla.	1932	Okla. City.
Rutherford, Vester M.	1907	Illinois	Univ. of Okla.	1932	Moreland, Okla.
Humphrey, J. Hugh	1902	Bramon, Okla.	Univ. of Okla.	1932	Okla. City.
Irvine, George Samuel	1907	Wichita, Kan.	Univ. of Okla.	1932	Prague, Okla.
Roberts, David Allen	1903	Morganfield, Ky.	Univ. of Okla.	1932	Enid, Okla.
Walker, Russell Holland	1907	North Carolina	Univ. of Okla.	1932	Okla. City.
Long, Leonard	1907	Prague, Okla.	Univ. of Okla.	1932	Okla. City.
White, Arthur Eugene	1906	Sayre, Okla.	Univ. of Okla.	1932	Okla. City.
Lewis, Russell W.	1906	Drummond, Okla.	Univ. of Okla.	1932	Walters, Okla.
Fahring, Shirley Anthony	1907	Union, Okla.	Univ. of Okla.	1932	Okla. City.
Haddock, James L., Jr.	——	Whitecastle, La.	Univ. of Okla.	1932	Norman, Okla.
Gentry, Raymond Carl	1907	Wayne, Okla.	Univ. of Okla.	1932	Pawhuska, Okla.
Lang, Silas Archie	1903	Newport, Ohio	Univ. of Okla.	1932	Tulsa, Okla.
Keen, Frank M.	1903	Elk City, Okla.	Univ. of Okla.	1932	Shawnee, Okla.
Pierson, Dwight D.	1905	Woodward, Okla.	Univ. of Okla.	1932	Okla. City.
Gilliland, James Orth	1908	Mangum, Okla.	Univ. of Okla.	1932	Mangum, Okla.
Danielson, Arthur David	1905	Kansas	Univ. of Okla.	1932	Clyde, Kans.
Duer, Joe L.	1905	Oklahoma	Univ. of Okla.	1932	Taloga, Okla.
Obermiller, Ralph G.	1905	Missouri	Univ. of Okla.	1932	Tulsa, Okla.
Monfort, John Joel	1907	Alva, Okla.	Univ. of Okla.	1932	Alva, Okla.
Chivers, Edgar Eymon	1875	Buffalo, N. Y.	Rush Med.	1899	Mannsville, Okla.
Riley, Warren Sumner	1903	ElDorado, Ark.	Univ. of Ark.	1930	Holdenville, Okla.
Rusten, Elmer M.	1902	Pigeon Falls, Wis.	Univ. of Minn.	1929	Okla. City.
Strahan, Eva Eugenia	1903	Poplarville, Miss.	Tulane Univ.	1928	Stillwater, Okla.
Scott, Philip Albright	1896	Emmelsburg, Ia.	Rush Med.	1923	Tulsa, Okla.

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